Contractors and Engineers

SEPTEMBER 1953

Coal-Mining Rig Digs Sewer Tunnel

Page 10

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A protecting concrete crib wall is built along the face of an eroding bluff on the Mississippi River. As a safety measure, a two-man crew checks for loose rock from the platform suspended from the crane boom. Waco scaffold provides a stairway for workmen. Page 38

Kentucky put the emphasis on flexibility when it designed this highway

Like other large cities, Louisville, Ky. has found it more and more difficult to cope with the traffic problem. To help relieve this situation, the Kentucky State Highway Department is constructing what is known as the Inner-Belt Highway, over which traffic entering Louisville from the east and south by-passes the heart of the city.

The most notable feature of this project was Kentucky's choice of a flexible type of construction from top to bottom. It consists of a 9-inch subbase of waterbound macadam, covered by a 3-inch base of hot-mix Texaco Asphaltic Concrete. To complete the highway, a Texaco Asphaltic Concrete pavement was laid in two courses, each 1½-inches thick. The result is a total thickness of 15 inches of completely flexible construction, which is capable of absorbing heaviest traffic impact year after year with a minimum of maintenance.

Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils offer the road builder a wide choice of improvements for his street or highway. Whether the volume of traffic calls for a heavy-duty pavement like that on Louisville's Inner-Belt Highway, a low-cost surface for a secondary road, or an inexpensive mat to eliminate dust and mud, there is a Texaco Asphalt product to fit the need. Helpful information for the road builder on all of these types is supplied in two booklets, which our nearest office will be glad to send you.

Refined from scientifically selected crudes, Texaco Asphalt products have earned and held the confidence of America's road builders for 50 years.

Constructing one of three courses of resilient, heavy-duty Texaco Asphaltic Concrete over a water-bound macadam subbase on Louisville's new Inner-Belt Highway. The contractor was the Breslin Construction Company of Louisville.

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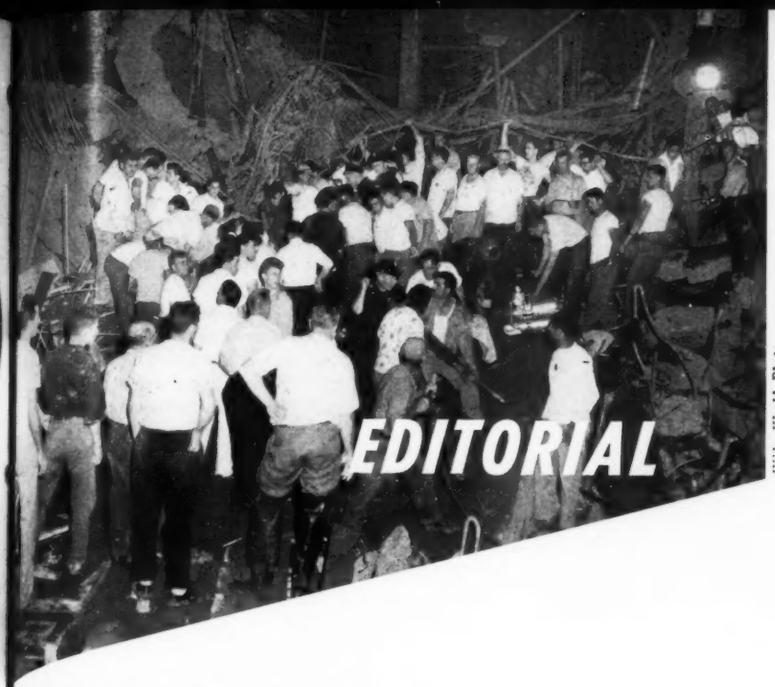

Wide World Photo

Safety In Construction

Safety in construction is no part-time proposition. It must be included in the basic planning and design of every project and considered in every detail of actual construction. Designing engineers do this automatically when they study loads and stresses, strength of materials, and safety factors. Project managers, construction superintendents, and safety engineers follow along with recommended practices to insure the safety of their workers. Occasionally something goes wrong, either in planning or construction, and a mishap occurs. From every one of these unfortunate happenings, we should learn a lesson to prevent their repetition.

This summer, a nearly completed 212-foot steel radio transmitting tower crashed to earth and injured several persons, fortunately none seriously. Not so lucky were those involved in the recent collapse of a four-story office building at a time when a concrete roof slab was being poured. In this instance, three workers lost their lives and ten others were injured. Authorities were quick to inquire into the cause of these catastrophes, and their findings should be carefully studied.

Too frequently the accidents themselves get the big writeups, while the reasons for them are never properly publicized so that others may benefit from bitter experience. Inadequate shoring, concrete floors that had not yet attained the required strength, or any other discoverable causes of the collapse should be made known. Contractors can then plan their work to avoid such possible hazards. Builders can save money as well as lives by really putting safety first.

Construction Setback

Although 1953 promised to be the biggest year ever for the construction industry, in certain parts of the country not all the various segments of the industry are working toward that desirable goal. Labor strikes in several cities have cut down considerably on the volume of anticipated work.

In New York City, for instance, the construction workers themselves brought building to a halt with a series of strikes that paralyzed the industry. First, the carpenters went out, and their demands for increased pay were met by one group of contractors but not by all. This muddled situation was further complicated when drivers of sand, gravel, ready-mix concrete, and dump trucks joined the strike for more money. These walkouts forced some 100,000 workers into idleness and tied up construction projects totaling $600-000,000. The end result will be a stiff rise in building costs in the city. Many proposed projects may have to be abandoned.

There is such a thing as killing the goose that lays the golden eggs. A good example may be seen in the coal mining industry. Government statistics now show that coal has finally slipped from its top position as the nation's chief fuel. Labor's demands no doubt have been a factor in the decline of coal. Such demands, of course, are directly related to high taxes as well as the high cost of living which has hit a new high this year. But when irresponsible strikes are called and labor refuses to negotiate, the loss that results is felt not only by the workers but by the entire industry.

Contractors and Engineers
magazine of modern construction

September, 1953

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A workman is dwarfed by one of the twin tunnels (rough diameter, 51 feet) that will take water from Niagara Falls to a $300,000,000 electric power station six miles away in Canada. Blaw-Knox steel forms are used to set the 3-foot-thick lining, which contains nearly 1,000,000 cubic yards of concrete.

NEWS AND VIEWS

of the construction industry—highway financing, garages, dams

In spite of cutbacks in Government spending and increased costs and materials prices this year finds the country riding the crest of the **greatest construction wave** it has ever experienced. With a total of $9,200,000,000 in contract volume for the first seven months of this year, 1953 is two per cent above last year's record high.

One area in which construction has been increasing is **road building**, and in view of recent legislation, it will increase even more during the next year. Almost all the states have considered modifying methods of distributing highway-user tax proceeds between state and local governments, have imposed state taxes benefiting localities, or have tried a variety of other methods to finance road construction.

In California, for instance, a new law will impose **higher registration fees** on automobile owners to secure funds for a ten-year highway program. The fees are expected to provide about $510,000,000 for county roads. In Missouri, maximum state aid for county roads has been increased from $750 to $1,000 per mile. In Massachusetts, a $300,000,000 network of state highways is planned, two-thirds of which will be financed by a bond issue. That state has more than $80,000,000 in roads already under construction in the program, and an additional $64,000,000 in contracts will be awarded soon.

Increased vehicle registration, which has emphasized the need for more roads, has also created a special problem in urban areas. Cities of all sizes throughout the country have plans in the hopper for building **off-street parking facilities** which will total millions of dollars in new construction. Chicago's program, one of the most ambitious, includes plans for five parking garages in the Loop and four more on the North Side, capable of handling more than 6,000 automobiles. One of the underground units, costing about $8,000,000, will accommodate 2,359 cars.

While vehicular traffic has caused most states to seek ways of increasing funds for highway purposes, financial arrangements for other projects have not been slighted. Delaware is clearing the way for the **construction of 42 school projects,** following the Legislature's approval of $12,329,080 for the program. Georgia has 58 buildings under construction in a $200,000,000 program, while South Carolina's improvement program has been brought to a total of $71,876,660, with the approval of $13,862,455 to pay for new building projects.

Working also with an eye on payments is the U.S. Army Corps of Engineers, now trying to make construction of **air bases in French Morocco** a more economical procedure. The command there is attempting to change the terms of payment to contractors so that a lump-sum method will be substituted for the cost-plus-fixed-fee system. The latter had been used when the bases were authorized in 1950 because of the unknown risk to the contractor and the urgent need for the bases. Contending that conditions are now known and uncertainties eliminated, the Corps of Engineers would like the lump-sum payment, a standard peacetime procedure, used once more. Although neither the Army nor the contractor is compelled to accept conversion of the present contract, the command is working to show that it will lead to more economical operation.

Not far from French Morocco, another air facility has been put into operation, the first of 23 international air terminals being constructed or modernized by the Turkish government at a cost of $24,000,000. This project is only one of several being undertaken by that country. Morrison-Knudsen International Co., Inc., of San Francisco has been awarded a contract for the $35,700,000 hydroelectric and irrigation project in the southern part of Turkey.

Several German firms are working on Turkish projects, and others have extended competition even to Afghanistan. Currently under consideration by West Germany's heavy industry is the building of what would be the greatest power and irrigation dam in the world, on the Nile River in Egypt.

While plans for dam building are being made in other countries, attempts to prohibit such construction are being made in this country. In November, voters in the state of New York will go to the polls to determine, among other things, whether the state's constitutional **prohibition against dams** in the forest preserve should be strengthened. If passed, it would mean that dams could be built in the preserve only if approved by referendum or if they were for water-supply purposes. The measure affects the proposed Panther Mountain Dam, which the Black River's regulating district claims is needed for flood control, and which conservationists say is for hydroelectric-power development.

Another matter sure to arouse comment in New York is the **toll collecting system** for the New York State Thruway, which will be tested early next year on a 150-mile section of the road. Part of the "foolproof" system operates on a camera-eye principle. A picture is snapped when the front axle of a vehicle passes over a treadle on entering the Thruway. This shows the vehicle's permit or charge account insignia and enough of the automobile or truck to allow toll station personnel to check the vehicle as it leaves the road. The system, which will handle the three methods for collecting tolls on the road, is expected to have its kinks ironed out by the time the main New York-Buffalo route is opened next year.

Less than one-third the size of the Empire State Building, this skyscraper in Milan, Italy, will be Europe's tallest building when it is finished. The 374-foot steel and reinforced-concrete structure will contain 30 stories and will be air-conditioned. *Wide World Photo*

To the Editor
CONTRACTORS AND ENGINEERS

We have been asphalt manufacturers and contractors for 40 years and think your article in the July issue (Turner Turnpike—Oklahoma's Show Road) is as nice as we have ever seen on the merit of asphalt turnpikes.

Respectfully yours,
R. H. Shafer
Ohio Road Improvement Co.
Columbus 15, Ohio

To the Editor
CONTRACTORS AND ENGINEERS

I have read with interest the article written by Ray Day in the July issue of CONTRACTORS AND ENGINEERS.

No doubt Mr. Day's article was written from information furnished by the Oklahoma Turnpike Authority, and obviously, no investigation was made concerning the merits of the decisions of the Turnpike Authority. In my opinion, there was no competition between the types of paving involved because a part of the blacktop surfacing design was included in the grading contract and this heavy subbase is not required for concrete pavement. Undoubtedly you are familiar with contracts being let for construction of the Ohio Turnpike. On this project, a 6-inch subbase only was specified under concrete pavement. This is also true of the last sections let on the Pennsylvania Turnpike.

I have read the maintenance report submitted by the general manager of the Turnpike. This report was based on limited mileage in a few states and compares concrete pavement which has been in service for ten to 30 years with blacktop pavements which have only been in service for a few years. A case in point is Kansas. They gave data for only three years, although the state has data covering a 20-year period. The blacktop in Kansas is new and was placed with old concrete pavement as a base. None is older than 1947 and the maintenance cost is low as compared with the cost of old concrete pavement. Obviously, such a comparison is unfair.

The Texas data covered six years although Texas has compiled maintenance data continuously since August 31, 1930. Over this longer period, concrete has a lower maintenance cost than the blacktop on flexible base. I think you will find this is true for all the states listed in the maintenance report of the Oklahoma Turnpike Authority. I wonder why reports were not submitted on the ten additional states which have kept continuous maintenance costs for a number of years.

Personally I think this is a biased article and does not present a true picture.

I am wondering whether your magazine makes any research on the articles printed. I have before me the latest data published by the Highway Research Board which shows the probable life of portland-cement concrete pavement is more than twice that of any other type of pavement in use on the nation's highways. I believe a different story would have been printed if research work had been done before publishing the article rather than taking the biased opinion of Oklahoma politicians.

This letter is not written with the thought of finding fault or being critical. It would seem to me, however, that an article dealing with such matters should be dealt with impartially if they are considered at all.

Sincerely yours,
Lyman L. Deane
P. O. Box 4522
Capitol Hill Station
Oklahoma City, Okla.

New Hyster Appointments

Election of Jack Lewis to vice president in charge of all production by Hyster Co., Portland, Oreg., manufacturer of industrial trucks and tractors, has been announced. Mr. Lewis has been with the company since 1942.

Philip S. Hill has been made vice president in charge of sales.

An electric concrete vibrator is used to prevent cement from arching over the inside of a cement hopper. A Stow 2-hp BU concrete vibrator is suspended from a pulley and the vibrator head is slipped into a pipe with a ½-inch wall. Pipes are located at different points in the hopper so that the vibration can be concentrated where needed. The hopper is a 120-ton bin with 4 compartments. For further information write to the Stow Mfg. Co., 400 Shear St., Birmingham, N. Y., or use the Request Card at page 18. Circle No. 691.

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The cable-dump trailer at right hauls 140,000 pounds of bulk material per trip. The off-highway trailer is a product of the Schonrock Equipment Mfg. Co., San Angelo, Texas. In addition to the recently introduced giant models, the company makes trailers in a variety of sizes down to 6 to 8-cubic-yard units for light trucks. The dumping mechanism on the line of trailers is activated by a cable and winch in much the same manner as the common block-and-tackle. For further information write to the company, or use the Request Card at page 18. Circle No. 831.

Justify Proposed Virginia Toll Road

Virginia State highway officials have received a report on the feasibility of a north-south toll road for the state, with two routes—one a rural line and the other an urban road—selected as the most practical of the several routes which have been under study since last fall. The report was made by Wilbur S. Smith of New Haven, Conn., whose firm of consulting engineers made the study.

The rural line, conecting U. S. 1 and 301 north of Richmond, and 460, 301, and 1 south of Petersburg, would be 40.7 miles long and cost an estimated $51,394,000. The city route 35.3 miles long would parallel U. S. 1 between Richmond and Petersburg. It would join U. S. 1 and 301 north of Richmond, and 1, 301, and 460 in the Petersburg area. The construction cost estimate is $57,252,000.

The report anticipated that either line would produce enough revenue to meet interest and principal payments during the first year of operation, and added that the rural line would repay its bonds by 1974, and the city line by 1973.

Construction estimates for both roads were based on four-lane divided highway for its full length. Six lanes would be provided in the congested portions of Richmond, which includes a James River Bridge crossing.

A primary consideration in route selection was the integration of the road with proposed improvements on U. S. 301, where traffic has been increasing more rapidly than on U.S. 1. While engineers stated that the rural line would provide the best solution to the area's traffic needs, they said that the city route will meet demands of through traffic more effectively

Research Review Published

The 1953 issue of the "Review of Current Research and Directory of Member Institutions", published biennially by the Engineering College Research Council of the American Society for Engineering Education, State College, Pa., recently appeared in print.

Fields of research cover all branches of engineering and most related fields. Other information in the book includes a comprehensive index of research project subjects, annual expenditures for such projects, sources of income for research, and special conferences and short courses of interest to research workers.

Copies of this book may be obtained at $2.50 each from V. E. Neilly, Secretary, Engineering College Research Council, 103 Mechanical Engineering, The Pennsylvania State College, State College, Pa.

Koppers Division Moved

The headquarters of the Freyn Department, Engineering and Construction Division of Koppers Co., Inc., Pittsburgh, Pa., has been moved from Chicago, Ill., to Pittsburgh. Dr. Walter H. Mathesius, a Freyn consultant, will remain in his offices at 109 N. Wabash Ave. in Chicago, as will several members of the Freyn sales force and the entire engineering department. The Freyn Department designs and constructs blast furnaces, sintering plants, and other equipment for the steel and allied industries.

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Names in the News

R. A. Haber, engineering consultant for the Delaware State Highway Department.

Personnel Changes In Delaware Highway Dept.

A reorganization within the Delaware State Highway Department has resulted in a series of personnel changes.

R. A. Haber, formerly chief engineer, is engineering consultant for the Department. Colonel William A McWilliams, formerly director of the Delaware Memorial Bridge, is chief engineer, and Walter B. McKendrick, Jr., has taken the post vacated by Colonel McWilliams. Robert S. Richards, Jr., is counsel for the Delaware Memorial Bridge Division.

With the exception of about a year, Mr. Haber has been associated with the Delaware State Highway Department since he was graduated from the University of Delaware in 1936. He has served in many divisions of the department.

Colonel McWillams has been with the department, almost without interruption, since 1920. Mr. McKendrick, is returning to the department after being associated with the engineering section of the Wilmington Water Department.

AASHO Policy Member

Hubert E. Sargent, chief engineer of the Vermont State Highway Department, has been appointed a member of the committee on planning and design policies by the American Association of State Highway Officials. The committee charts the broad aims and standards of highway development for the country, and is limited to five members from each of the association's four regions.

Mr. Sargent, who has served as chief engineer of the Vermont State Highway Department for 28 years, was the developer of mixed-in-place bituminous surfaces.

McVey Is Austin Manager

John H. McVey, formerly district engineer, has been named district manager of The Austin Co., engineers and builders, in southern California. Mr. McVey joined the Austin organization as chief draftsman in 1934. He succeeds R. E. Ward, who will continue to serve as a vice president and consultant.

Regional Representatives Appointed by NHUC

Two appointments have been announced by the National Highway Users Conference, Washington, D. C.

E. E. Cox, former manager of the American Automobile Association's Wyoming Motor Club Division, has assumed duties as NHUC regional representative in the states of Washington, Oregon, Idaho, and Montana.

G. H. Buenger, who was regional representative in the northwestern states since 1949, has now taken over similar duties in the states of Texas, Arizona, New Mexico, and Louisiana.

Ingram Assigned New Post

Colonel Lionel R. Ingram has been assigned as executive officer of the South Pacific Division, Corps of Engineers, U. S. Army, with headquarters in San Francisco, Calif. As second in command, he will assist in administering the vast military and civil works construction program now underway throughout California, Arizona, Utah, and Nevada.

Colonel Ingram has practiced engineering in private industry, with the Civilian Conservation Corps, and during World War II, he served in the U. S. Army in Europe. In his new position, he replaces Colonel W. W. Ragland.

PRODUCTION: **BIG**

DOWN TIME: **SMALL**

REASON: **CAT*** **DW20s**

Major earthmovers on this 1,800,000 cu. yd. contract at Des Moines Municipal Airport are high-speed, high-capacity Caterpillar DW20 Tractors with No. 20 Scrapers. John P. Abramson Construction Co., Des Moines, Iowa, assembled a line-up of big yellow equipment including 'dozers, DW10s and motor graders to build the 2,800-ft. extension on the northwest runway. It calls for two fills—one of 51 ft., the other of 35 ft. Superintendent Jay A. Scott reports: "Caterpillar equipment is the most standard there is—down time is small with it. We get very good service from our dealer."

Jobs like this need big producers that stay in there working—and you're looking at one in the DW20. It has a travel speed of 26.6 m.p.h., a capacity of 20 cu. yd. heaped and 15 struck, and plenty of power—225 HP at the drawbar. Cable-controlled, it loads and unloads quickly, with positive action for handling sticky materials that foul up ordinary units. Big tires float it over muddy or sandy terrain. Three-point suspension allows the DW20 to move over bumpy going with four wheels on the ground. Power-packed traction licks adverse grades. And it's a *safe* rig—operators handle it with the confidence that spells output. All these—and many other advantages—contribute to *fast cycle times.*

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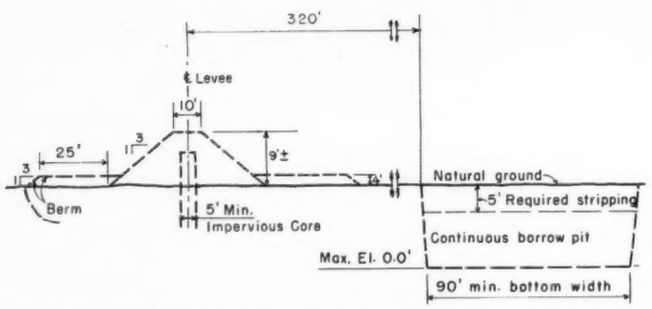
NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

New Construction Adv

Unique Drill Barge Cuts Borrow Pit for Long Levee

This aluminum drill barge rides the soft Everglades muck as the four Ingersoll-Rand drills mounted on movable towers prepare a line of holes for blasting the underlying lime rock. In the wet season, when the area will be inundated, the lightweight rig will float.



Levee 7, the western boundary of the most northern conservation pool, will be built up hydraulically from a continuous borrow pit of blasted lime rock.

WHAT TYPE OF RIG would do the best and fastest job of drilling and blasting an 11-mile-long continuous borrow pit through the heart of a subtropical swamp?

This was the problem that faced the heads of Gahagan Construction Corp. of New York, as they began to plan their $2,268,000 levee-construction project in the Florida Everglades. The plans called for constructing a 16.8-mile-long levee of limestone materials, dredged from a continuous borrow pit along its east side and placed hydraulically on a thick, undisturbed, natural peat base. The area is characterized by a 7 to 14-foot-thick layer of ink-black peat on a stratum of medium to hard limestone.

With the exception of a 5-mile stretch at the north end of the levee, all of the limestone in the long pit required breaking up before a dredge could handle it. And because of the soil's poor bearing capacity and its alternately exposed and inundated condition, ordinary equipment could not be used.

Gahagan's vice president, Vincent Hussin, provided the answer—a lightweight aluminum drill barge with a winch and anchor setup that propels the unit under any surface condition. In the dry season it slides over the peat base, and in the wet season it floats. With two sets of Ingersoll-Rand rock drills mounted on cars that ride along the stern edge, the unique rig is now averaging well over two hundred 20-foot holes, (9 feet of muck, and 11 feet of rock) each 10-hour day.

The huge job began early this year and is expected to be completed by 1955. Levee 7 will form the western boundary of Conservation Area No. 1. (See accompanying article.) It begins near State Road 80 at about mid-point between West Palm Beach and Lake Okeechobee. From there it runs southwesterly for about eight miles, and then southerly another eight miles to the Hillsborough Canal.

As shown in the drawing, the levee will have a trapezoidal cross-section with an average height of approximately 9 feet. Sides will slope 3 to 1. The crown will measure 10 feet and the base about 70 feet. An impervious core 5 feet wide will be built up hydraulically. Berms 25 feet wide and 4 feet thick will be constructed on each side of the levee. Materials other than peat are required for the construction of the berms.

The edge of the continuous borrow pit is 320 feet from the centerline of the levee. Pit excavation must cover a 90-foot width and extend at least as deep as elevation 0.0. The contractor will dredge off and spoil all surface vegetation and roots together with underlying peat to a minimum depth of 5 feet below natural ground surface. All other peat will be disposed of in the runoff of the hydraulic levee building process.

The blasting operation was started 6 months before the dredge arrived, to make sufficient work available for the 24-inch unit. Because only three

(Continued on page 11)

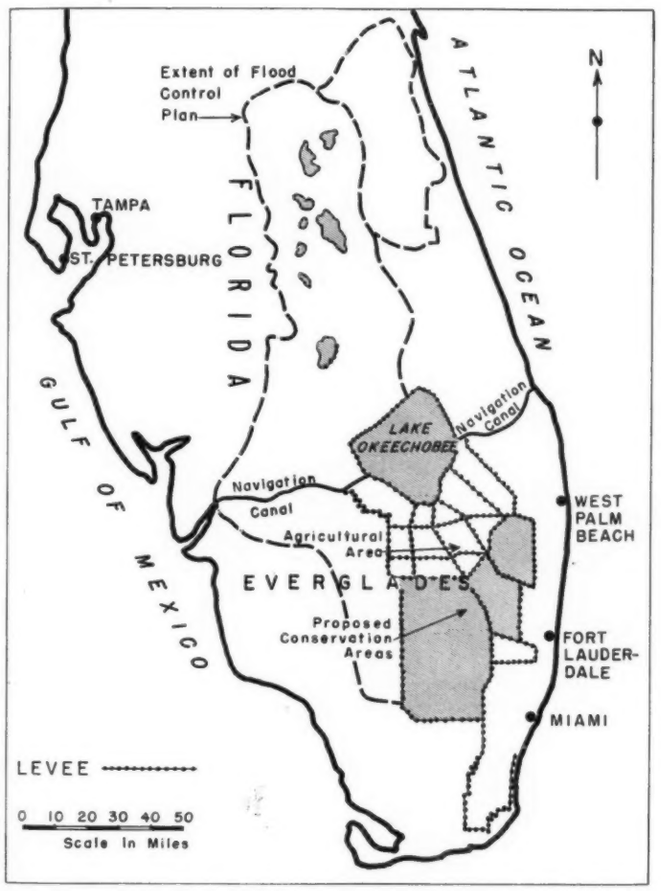
A Clyde 2-drum hoist powered by an International engine pulls the barge along with a five-part line connected to H-pile anchors driven to rock every 10,000 feet.

This is the "fleet" of smaller air boats used to transport personnel. Workmen walk over one of the toe dikes that will confine material during the hydraulic levee-building.

Advances Everglades Water Control

By ALBERT C. SMITH
Field Editor

Broad Program Will Eliminate Recurring Floods and Drought



An extensive network of levees, canals, structures, and pumping stations is being built in the Florida Everglades as a multi-purpose water control project. The huge conservation areas shown on the map will store water for irrigation during the dry season. All work is under the direction of the Corps of Engineers.

In His Welcoming Address to the recent convention of the Associated General Contractors at Miami, Fla., the mayor of the city remarked to the members that they were meeting in a state that is 500 miles long, 200 miles wide, and 10 feet deep. Actually, for the Everglades area of southeastern Florida, 10 feet is a gross overstatement.

With the exception of a coastal ridge on which the string of famous resort centers is built, the lower portion of the state area is a bare few feet above sea level—and most of it is covered with shallow water. The ground consists of a stratum of white lime rock overlaid with a 5 to 15-foot-thick mat of ink-black muck. Vegetation consists almost exclusively of a razor sharp weed known locally as saw grass.

Florida has a tidal shore line of 3,751 miles, the longest of any state. It also boasts the largest number of lakes, an estimated 30,000. The biggest is Lake Okeechobee at the north edge of the Everglades. Its 730 square miles of surface make it the second largest freshwater lake wholly within the country.

Thus it is easily seen that, regardless of direction, one cannot travel far in central and southern Florida without encountering water—and large quantities of it. It is this condition that has provided the stage for the state's great hurricane disasters.

Hurricane Problem

Contrary to what one would imagine, the major hurricane problem in Florida is not one of raging surf and high tides. Rather, it is the rapid and extensive displacement of huge bodies of inland shallow water blown by the great storms as they move in any number of directions across the peninsula. To aggravate conditions, the peak of the hurricane season usually coincides with the peak of the rainy season.

After several disasters early in the 1900's, canals were dug from Lake Okeechobee to the Atlantic Ocean to drain both the lake and the Everglades during the rainy season. But the program was inadequate. Disaster struck again in both 1926 and 1928. Hurricanes crossed the lower portion of the state, scooping up huge quantities of lake water and spilling it onto the towns that rim its southern shore. More than 2,000 lives were lost in one of these disasters.

The coastal cities were also hit, especially Miami and Fort Lauderdale, when the film of water on the Everglades was blown over the coastal ridge and inundated much of the developed area.

New Program

Consequently, a new construction program was authorized. The plan included construction of levees along both north and south shores of Lake Okeechobee, and large-scale improvement of the drainage canals. The level of the lake was then maintained at 12.5 to 15.5 feet above sea level. This provided sufficient capacity to allow for a 6-foot navigation canal and to impound safely the flow from the tributaries.

(Concluded on next page)

Boxes of dynamite are hauled out from the landing by this barge air boat through one of the Everglades drainage canals. This is the only means of transportation. *C. & E. Photos*

When the supply boat goes as far as it can, the boxes are transferred to this sled which is pulled by an Oliver swamp buggy.

A New Program for Everglades Water Control

(Continued from preceding page)

Sector-type hurricane gates that can be closed against a head of 16 feet of water by two men were built at navigation canal openings. Radio-equipped observation huts were placed at these gates to house the men that keep track of the direction and intensity of storms. (Men who have manned these posts during a hurricane report that the shallow lake becomes almost completely dry on one side as the wind pushes the water up on the other side—sometimes as high as 12 feet above its normal level.)

This program prevented further damage until the fall of 1947, when a fierce hurricane hit at the peak of a record rainy season. The levees on the lake held, but severe erosion was inflicted on them at a number of points. Flooding of Miami, Fort Lauderdale, and the rich agricultural area south of the lake, however, caused the most serious destruction. And because of the soaked condition and the flat terrain, immediate relief was not possible.

Comprehensive Plan

Accordingly, the Corps of Engineers, U. S. Army, prepared a comprehensive plan of both flood control and conservation for central and southern Florida. It was adopted by Congress in 1948 and undertaken by a team composed of the Corps of Engineers and the Central and Southern Florida Flood Control District, an agency of the State of Florida.

The primary purpose of the plan is to provide water control and to prevent damage caused by recurring floods and drought. When completed, it will provide a system of water control that will directly benefit 2,300,000 acres in an area approximately 100 miles wide and 200 miles long.

The Federal government provides 85 per cent of the construction funds and supplies the services of its Corps of Engineers to design and supervise the work. The State of Florida appropriates 15 per cent of the construction funds and it acquires the land needed for such things as reservoirs, right-of-ways, and public relocation. The District agency represents the people in the area, furnishes all other right-of-ways, and maintains all works except those for navigation and for discharge from reservoirs.

The basic plan is to remodel the natural stream system of the area by means of levees, channels, spillways, reservoirs, control gates, pumps, and salt water barriers.

It consists of five major programs:

1. The rapid removal of flood waters will be accomplished by improving existing channels, constructing new ones, and installing pumps in channels where gravity flow is inadequate.

2. Control gates and spillways will be provided to prevent overdrainage of the land.

3. Control spillways will be built as salt water barriers on the drainage channels that enter the sea.

4. The over-all plan includes provisions for development of both urban and rural areas. Protecting these areas from floods will be accomplished with levees, canals, control structures, culverts, and pumps.

5. The dry season imposes serious drought problems. The plan is to provide irrigation from the waters in Lake Okeechobee and also from three huge interconnecting water conservation areas to be built in the southeastern section of the Everglades. Lake Okeechobee's capacity will be increased by raising the present levees.

Conservation Areas

The conservation areas will be built by means of encircling dikes. The huge pools will extend over 1,500 square miles and will store about 4½ million acre-feet of water. They will take flood waters during the wet season, store them until needed, and later irrigate the 657,000 acres of developed and potentially productive agricultural lands south of the lake and along the coast. The impounding levee on the east side of these pools will also protect the coastal cities from Everglades' flooding. The land selected for conservation pools is not suitable for long-term agricultural use.

To summarize, the Central and Southern Florida Flood Control plan will provide a high measure of control of the waters in southeastern Florida. In addition to flood control and conservation, the plan will benefit cross-state navigation, recreation, municipal and agricultural water supplies and development, agricultural production, wildlife, fresh water fish, public health and sanitation, and will reduce salt water encroachment significantly.

Buy U. S. Defense Bonds!

General Motors Plans Euclid Stock Purchase

General Motors Corp. is planning to purchase the Euclid Road Machinery Co., Cleveland, Ohio, through an exchange of stock. The transaction must still be approved by Euclid stockholders.

Half a share of GMC common will be traded for Euclid preferred, while 7.9 shares of GMC common will be exchanged for a share of Euclid's Class A stock. A total of 305,137 shares of GMC common will be exchanged for Euclid's 16,510 shares of preferred, and 37,580 of Class A.

Euclid, which owns a subsidiary near Glasgow, Scotland, manufactures rubber-tired bottom-dump and rear-dump carriers with 10 to 50-ton capacities. General Motors supplies diesel engines and torque converters for the heavy trucks.

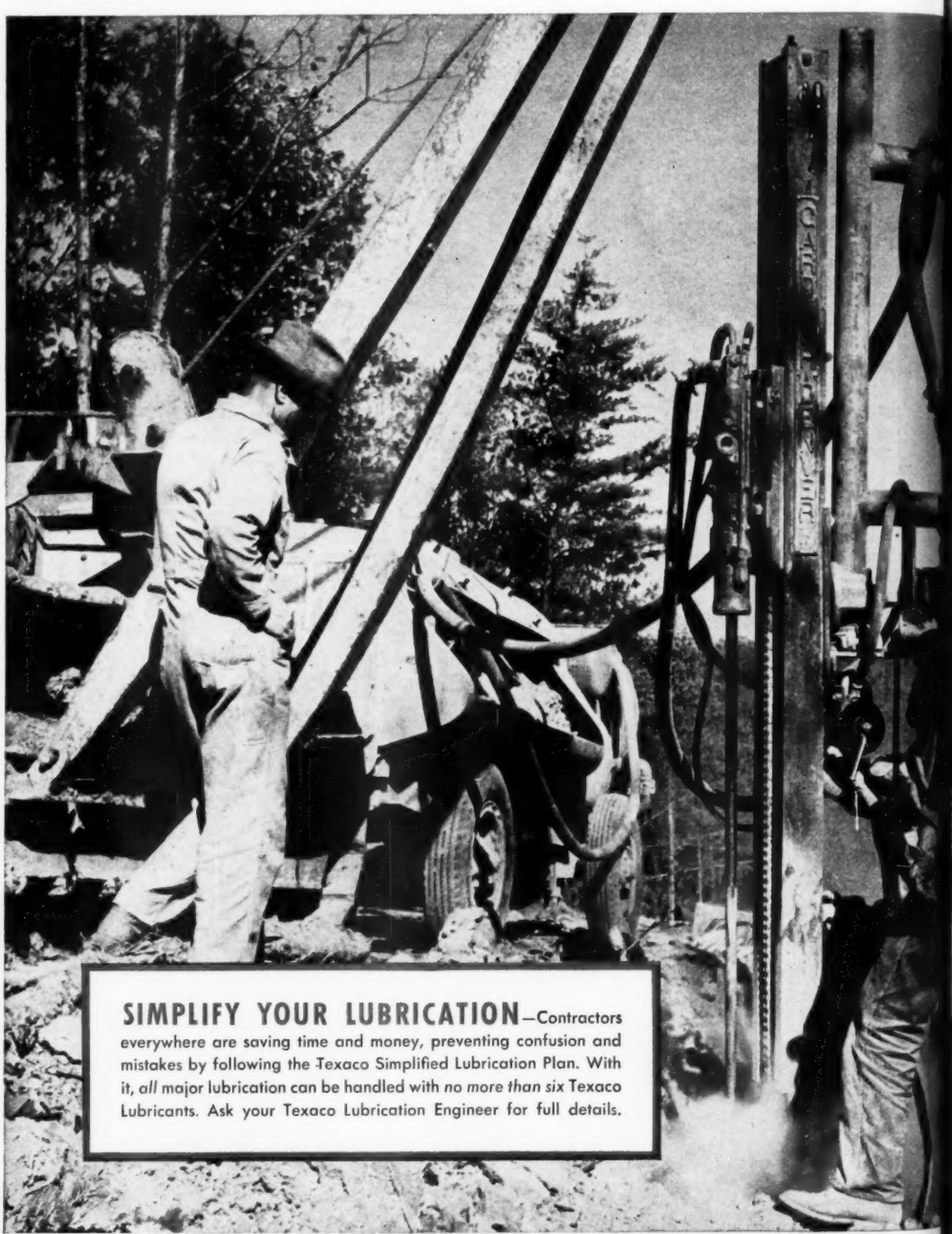

SIMPLIFY YOUR LUBRICATION—Contractors everywhere are saving time and money, preventing confusion and mistakes by following the Texaco Simplified Lubrication Plan. With it, *all* major lubrication can be handled with *no more than six* Texaco Lubricants. Ask your Texaco Lubrication Engineer for full details.

Photo courtesy Gardner-Denver Co.

TEXACO

CONTRACTORS AND ENGINEERS

Unique Drill Barge Cuts Borrow Pit

(*Continued from page 8*)

miles of the upper half of the borrow pit required drilling, plans were made to begin work at the bend, proceed north for three miles, and then move into the eight-mile southern strip.

While the aluminum barge was being fabricated, the contractor brought in two lightweight Insley cranes with ½-yard dragline buckets. He installed 48-inch tracks, set the cranes on mats, and started them building toe dikes at the bend. These dikes, cast up from 18-foot-wide and 3-foot-deep trenches, run along the outside edge of the levee berms and will be used to confine the material during the hydraulic placing. In addition, the trenches serve as air-boat canals during the dry season.

Drill Barge

The 90 x 25-foot drill barge was fabricated at a landing on the Hillsborough Canal. The structural aluminum frame is covered with a ⅛-inch welded-steel skin. Along the 90-foot-wide stern, two cars run back and forth on a 9-foot gage track. Each car mounts two 25-foot towers supported by box-girder-type stiff-legs and mounting Ingersoll-Rand drills. Towers are 7 feet apart to provide the required hole-spacing. Each tower group is supplied with air by an Ingersoll-Rand Gyra-Flow 600 compressor.

Holes are drilled in a staggered pattern, 13 or 14 to a line. Lines are 8 feet apart. The 1½-inch steel with 3¾-inch Timken detachable bits drill the 20-foot holes.

The workman on the left rams dynamite into a hole, and the man in the center jets a loading pipe with compressed air, as the drills on the right begin two more holes.

DuPont 60 per cent dynamite is loaded through 2-inch pipe casings suspended from outriggers on the drill towers. After two holes are drilled, a pneumatic hoist moves the car over 14 feet to permit the drills to begin two more holes. The loading tubes are then positioned directly over the previously drilled holes, lowered into the holes, connected to the air supply, and used as cleaning jets. When the hole is clean, the air line is disconnected, a plug opened at the top of the pipe, and dynamite sticks rammed down into the hole. As the sticks are rammed together, the casing is gradually raised. Scaffolds permit workmen to reach the top of the casing as the last few sticks are placed.

To keep the drills operating continually, the holes in the middle of the line are loaded with separate casings, thus freeing the cars to return to the ends of the track. The barge then moves up another 8 feet and a new line of holes is drilled.

Ordinarily, 15 to 17 lines are shot every day using about 2,200 pounds of dynamite. Shots are scheduled so that the barge is at least 70 feet from the blast area. In addition, the group's line closest to the barge is delay fused to soften the blow on the loaded holes in the next day's group.

Fully equipped, the barge weighs 39 tons, or 30 pounds per square foot bearing. A Clyde 2-drum hoist, powered by an International engine, pulls the barge along through a 5-part line connected to H-pile anchors. These anchors were driven to rock and are spaced every 10,000 feet. A seesaw system was found best, making each 8-foot move.

(*Concluded on next page*)

Ordinarily, loading tubes hanging alongside the drill towers are used to place explosives as new holes are drilled. But on the holes in the center of the line, workmen use a separate set of loading tubes so that the towers can return to the end of the barge where a new line of holes can be started.

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Years of working with air compressor operators in every field have shown Texaco Lubrication Engineers that clean, low-cost performance comes only when you lubricate your compressors with an oil that's *exactly right* for *your particular* operating conditions.

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Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

Unique Drill Barge Cuts Borrow Pit

(Continued from preceding page)

Transportation

One of the contractor's toughest problems was the transportation of both men and materials out to the drill barge. Because roads are nonexistent in the area, air boats are the only answer. These lightweight shell-type crafts are driven by an airplane propeller and travel from 20 to 50 mph. Three small air boats, each with a capacity of four, carry the men, and one large air boat hauls supplies. The smaller boats require only a few inches of water and are able to maneuver even the shallow toe-ditches during the dry season. The heavier supply boat, however, operates only in the main canals and must transfer its load to a swamp buggy at the canal head. An average one-way trip by air boat from the landing to the barge takes up to three-quarters of an hour.

Personnel

The work is under the direction of the Jacksonville, Florida, District Office of the Corps of Engineers, headed by Col. Herman W. Schull, Jr. George R. Coslow is area engineer, and Albert R. Broadfoot is assistant area engineer of the Everglades flood control work.

Vincent Hussin is project manager for Gahagan Construction Corp. L. J. Bergmann is superintendent, and J. S. Greer is foreman of the drilling operations.

Regular checking and preventive maintenance will keep your equipment working profitably.

Caterpillar crawler tractors and sheepsfoot rollers are among the 137 pieces of earth-moving equipment being used by the Excavating & Grading Contractor's Association for its 1953 community project. As many as 214 members and employees worked on the job, which netted $9,500 for the EGCA coffers.

Joint Earthmoving Job By Association Members

Working as a unit, the members of the Excavating & Grading Contractors Association of Southern California did a 32,000-cubic-yard earthmoving job at a cost of only $12,000 as the association's community project for 1953. Deductions for fuel and food costs brought the EGCA's net to $9,500.

The work was on the preparation of a building site for the Minneapolis-Honeywell Co. in Gardena, near Los Angeles, which had to be stripped of unpicked cauliflower before earth-moving began. The job required all the elements of a cut and fill, compaction, and finished grade operation on 16 acres of heavy and sandy clay.

A total of 86 firm and individual members of the organization contributed 137 pieces of earthmoving and other equipment for the 20½-hour job. Equipment included 17 track-type tractors, 24 tractor-scraper combinations on rubber, 13 motor graders, and 5 tractor loaders, in addition to 81 pieces of miscellaneous equipment.

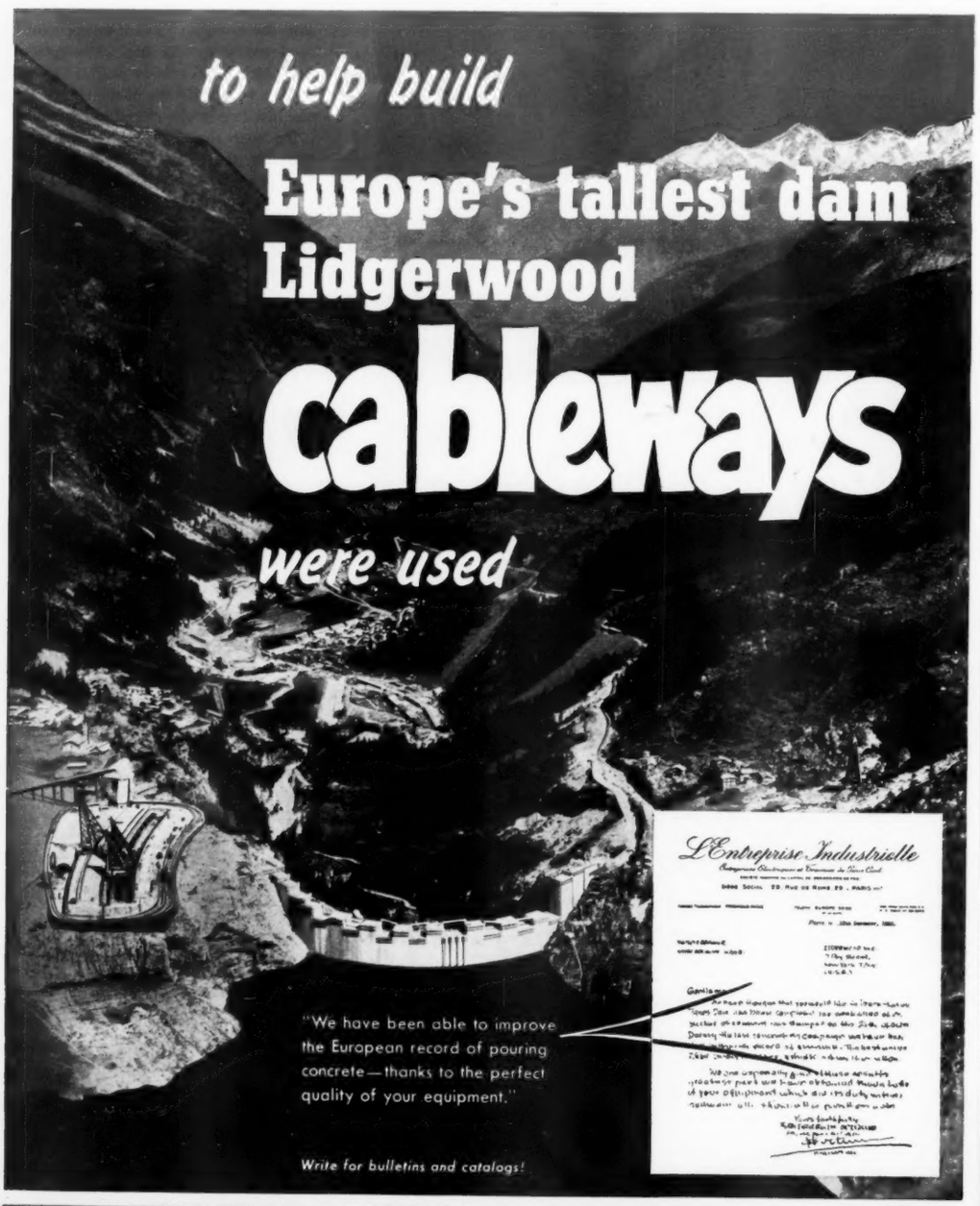
The job was completed in two days, with men working from 6 a. m. to 5 p. m. the first day and 7 a. m. to 4:30 p. m. the following day. A total of 1,500 yards of earth were moved each hour on the job. At times, there were 214 members or employees on the job, directed by Jack Prince and Dick Scott, general superintendents.

Builder's Transit-Level

■ A builder's transit-level is illustrated in literature from Keuffel & Esser Co., Adams and Third Sts., Hoboken, N. J. With the telescope locked in the horizontal position the N5155 is a level. Turning the lever over allows the telescope to tilt. It is then possible to sight objects above or below the horizontal, to plumb vertical lines, measure vertical angles, and to set or determine slopes and grades.

A detailed photograph of the instrument shows the telescope tilting lever and points out features of the horizontal circle, the leveling screws, and the tripod.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 833.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GE Laboratory To Help Explore Power Generation

A $3,500,000 product development laboratory, for the study of the development of power generation equipment, is being built in Schenectady, N. Y., by General Electric Co. Ebasco Services, Inc., of New York is supervising design and construction of the building, which is scheduled for completion late next year. The main section of the unit will be 200 feet long and 80 feet wide.

The purpose of the laboratory is to improve the design of turbine components so that steam can be used more efficiently in generating electricity. Development work in both high pressure and low pressure sections of turbines will be carried on in the laboratory, in addition to tests on improved bucket designs for the new large turbines.

Included in the project will be general purpose testing facilities for hydrogen seals, oil pumps, bearings, fans, and other turbine and generator components. The unit will serve as an addition to the company's large steam turbine and generator department, which now includes a materials and process laboratory, an air-test laboratory, and the services of the organization's General Engineering Laboratory and the Knolls Research Laboratory.

Road Machinery Folder

■ A new folder describes a line of road machinery made by the William Bros. Boiler & Mfg. Co., 1057 Tenth Ave., S. E., Minneapolis 14, Minn. The literature illustrates and describes the company's pneumatic-tire rollers, the Roll-O-Pactors, which weigh up to 100,000 pounds loaded. Tamping rollers and steel rollers are also shown.

The complete line includes the Bituminizer distributors, Spray-matic spray bars, portable steam generators, and asphalt circulators.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 750.

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Engine belt and electric driven pumps with many new features to give you outstanding performance at low cost. A.G.C. rated. Write for special bulletins.

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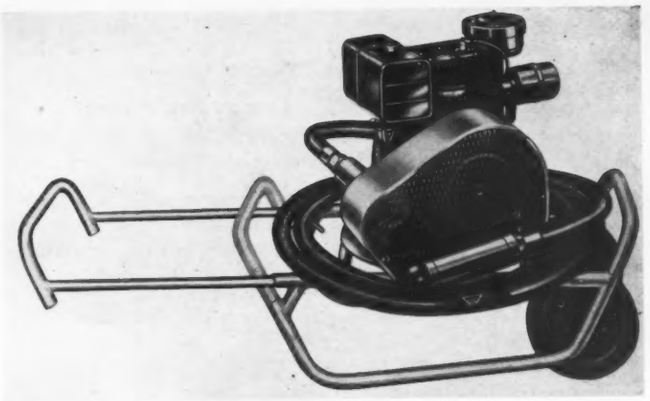
Modern Parts Service

■ A new booklet tells how the Euclid Road Machinery Co. gives parts service.

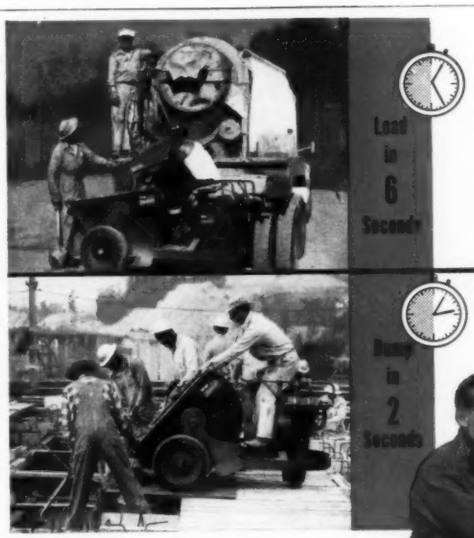
Expansion of the company's parts department to provide improved service to Euclid distributors was undertaken at the beginning of this year when operations were moved to a new plant at 18222 Lanken Ave., Cleveland, Ohio.

The booklet tells how, with modern office space and equipment, the time required to process parts orders has been reduced. Inventory control cards, orders, invoices, and other documents are all prepared by I.B.M. equipment.

To obtain this literature write to the Euclid Road Machinery Co., 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 773.

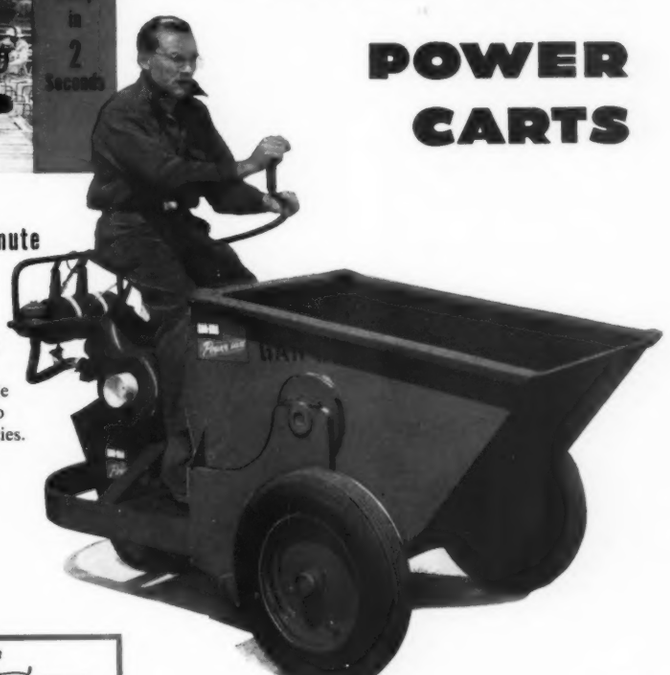


A new telescoping handle that extends 20 inches makes the Viber gas vibrator carriage easier to handle on narrow scaffolding and in close quarters. In the extended position the handle reduces by 40 per cent the lifting force required and provides a lever arm of 51 inches to give control and stability to the unit as it rolls over rough ground, boards, and other obstructions. For further information write to the Viber Co., 726 S. Flower St., Burbank, Calif., or use the Request Card at page 18. Circle No. 808.



Stop watch facts about

Gar-Bro POWER CARTS



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NOT JUST SPEED—*but shuttle speed*—back and forth from mixer to form, that's what you get with Gar-Bro Power-carts. You keep truck mixers moving fast and you keep your spreaders, finishers and the whole crew working at top speed. There's no wasted time, no waiting and no penalties. Each Power-cart can be loaded in six seconds; dumping is even faster. That's why the flow of concrete to the forms is practically a steady stream when you have two or more Power-carts on the job.

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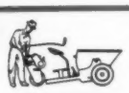

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AISI Nominates Teplow

Leo Teplow has been appointed industrial relations consultant of American Iron & Steel Institute, New York, N. Y. In the newly created position, Mr. Teplow will also serve as secretary of the Institute's committees on industrial relations, health, and safety.

Mr. Teplow worked for several years in the U. S. Patent Office, later became patent attorney of Allis-Chalmers Mfg. Co., and eventually became assistant to the vice president in charge of industrial relations. He succeeds Grover C. Brown, who is retiring after 36 years in the industry.

Line of Fire Pumps

■ A bulletin on its line of horizontal single-stage and vertical multi-stage fire pumps is available from the Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y. The manufacturer states that both types of fire pumps have been approved by the National Board of Fire Underwriters and the Associated Factory Mutual Fire Insurance Companies for permanent installation in fire protection systems of the hose line or sprinkler type. The pumps are supplied with approved fire fittings and can be used for booster service.

Cross-section views and other illustrations give details on the design, construction, and performance of the pumps.

To obtain this literature write to the company and request Form 7226, or use the Request Card at page 18. Circle No. 715.

CAT* power helps Farnsworth stay ahead of schedule on Memphis sewer project

R. P. Farnsworth & Co., of New Orleans, has a $1,500,000 contract for laying a 60-inch main sewer, 10 miles long, for the City of Memphis, Tennessee. Average depth of the floor line is 20 to 30 feet, and the soil is largely gumbo.

Though the contract calls for completion in 1955, the company expects to finish ahead of time. Says Superintendent Thomas B. Sellers, Jr., "We have a lot of Caterpillar equipment, and it's good equipment. It stands up well and can be depended on."

There are three excavators on the job, all powered by Cat Engines. A D17000 swings the boom of a Lima 3½-yard dragline, a D13000 powers a Lima 1½-yard clamshell, and in a Koehring 1-yard dragline there's a Cat D318. In addition, Farnsworth uses three Caterpillar track-type Tractors and a No. 12 Motor Grader. There are definite advantages in standardizing on the big yellow equipment. Simplified maintenance, operator familiarity, and fast parts and repair service from a single dealer—all contribute to more production with less down time.

Fuel economy is an added benefit. The D17000 Engine, for instance, delivers an honest 200 HP on intermittent duty. Like all Caterpillar Engines it operates on low-cost No. 2 furnace oil without fouling, even at idling speeds.

Leading manufacturers can supply Caterpillar power in their equipment. For replacement engines see your Caterpillar Dealer. He has 12 sizes available up to 500 HP; electric sets to 315 KW.

Caterpillar Tractor Co., Peoria, Illinois.

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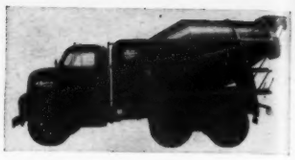


Concrete Truck Mixer

■ A new 4½-yard concrete truck mixer is announced by Construction Machinery Co., 447 Vinton St., Waterloo, Iowa. The mixer is run by a Ford power unit and transmission close-coupled to a modified Ford truck rear-axle gearing. A roller chain drive absorbs shock. The mixer has two operating ranges; one for high-speed charging and shrinking, and one for lower-speed mixing and agitating.

The concrete discharges through a large drum opening. Dual clutch and throttle controls are mounted on either end of the drum and can be reached from the catwalk or ground.

The drum design features a large drum diameter, deep L section blades, and a progressively increasing blade slope. The material from the charging hopper hurdles the end-blade section into the mixing part of the drum. The enclosed hopper spout eliminates flash-back of cement and spilling of aggregate during charging.

In addition to the new unit, the company also makes 3 and 5½-yard models.

For further information write to the company, or use the Request Card at page 18. Circle No. 805.

Automatic Boiler Units

■ A complete self-contained boiler unit for steam process as well as steam and hot water heating service is illustrated in literature from Orr & Sembower, Inc., Morgantown Road, Reading, Pa. The steel internal-furnace boiler, the burner and fuel handling equipment, the automatic operating and safety controls, the draft fan and motor, and all other accessories are mounted on a structural steel base to make a complete unit. It is ready for operation when fuel, water, electric, and steam connections are completed.

Construction and operation advantages of the boiler unit are three-pass design forced draft, and controls are described. The Powermaster automatic boilers come in 17 sizes from 15 to 500 hp.

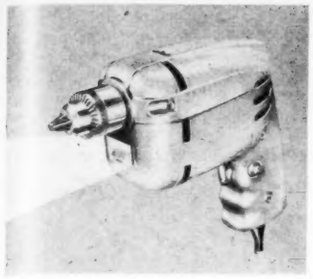
Detailed specifications, photographs, and cutaway drawings describe the component parts of the boiler units.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 719.

Goodrich Welding Moves

Goodrich Welding Equipment Corp. is moving its entire operation from Reed City, Mich., to Hudsonville, Mich., where a new factory has recently been completed. The reasons given for this move are superior rail and highway connections, plus the fact that it is nearer customers and suppliers.

The company manufactures resistance welding equipment, transformers, automatic production machines, jigs, fixtures, etc.



Drills in Dark Places

■ A new ¼-inch portable electric drill has its own built-in light for drilling in dark, inaccessible places. The Work-Lite weighs three pounds and has a Jacobs geared chuck, and Cutler-Hammer trigger lock-type switch and an aluminum housing.

At no load the drill is operated at 2,100 rpm, and at full load at 1,000 rpm. It has a universal-type motor rated at 2.0 amps.

For further information write Fairchild Industries, Division of Fairchild Camera & Instrument Corp., Burlington, Vt., or use the Request Card at page 18. Circle No. 741.

Pan-Type Apron Feeders

■ A new illustrated bulletin on their extra heavy duty 9-inch-pitch apron feeders is offered by the Universal Engineering Corp., 625 C Ave. N. W., Cedar Rapids, Iowa. Among features of the feeders are a new half-tooth manganese steel sprocket design that requires two shaft revolutions to contact all teeth and is said to double tooth life.

A reinforced T-section is welded to bottom of flights and against the chain for maximum strength and to prevent cupping of flights. Chains are extra heavy duty type with replaceable manganese steel work-hardened bushings and large case-hardened steel pin. Chains are welded integral with flights and T-sections.

Cast steel rollers feature easy replacement and one-side lubrication through flexible steel tubing. All wearing parts can be replaced without removing upper hopper or lower structure of the feeder. The units are available in 36, 42, 48, and 60-inch widths. Manganese flights are optional.

To obtain this literature write to the company and request Bulletin No. U536, or use the Request Card that is bound in at page 18. Circle No. 694.

Film on Marion Shovel

A 16 mm color-sound film on the 191-M shovel has been released by Marion Power Shovel Co., Marion, Ohio. The motion picture, filmed during the construction of two large dams in the midwest, runs 12½ minutes, and shows both the all-electric and diesel-electric models of the 191-M shovel at work with 11-yard dippers, loading truck haulage units in the 50-ton class in three and four passes. Shots taken inside the shovel's housing show special design, space, etc.

The film may be obtained by writing on company or organization letterheads to the Advertising Department of the Marion Power Shovel Co.

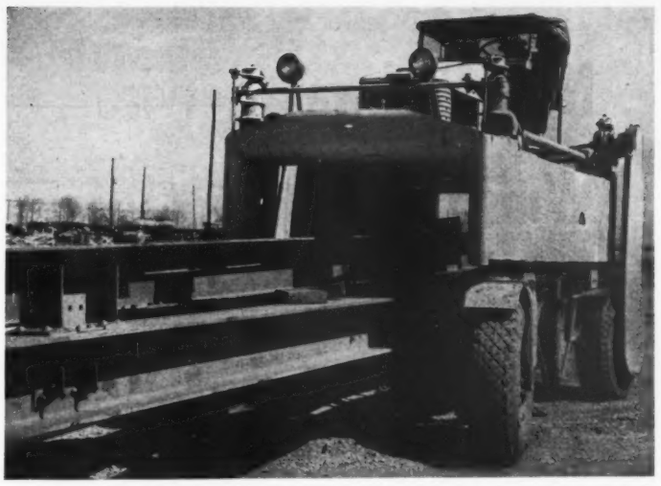
Machine Makes Payroll

■ A new bulletin illustrates a bookkeeping machine that makes automatic computation and proof of net pay for each employee in one writing.

The machine, which resembles a standard typewriter, provides a complete payroll writing that includes a complete pay statement with either check or cash envelope, an earnings record with a chronological history of earnings and deductions for each employee, and a pay register in perfect agreement with other records.

Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y., maker of the machine, offers a service to help determine payroll needs.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 790.



Here is one of the Hyster straddle trucks that F. H. McGraw & Co. is using to handle large volumes of small structural sections on the AEC Paducah Area Project.

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New Highway Service Wins Quick Acceptance

INFORMATION department gives highway facts to Idaho public, saving engineers' time and aiding State highway department

THE IDAHO DEPARTMENT OF HIGHWAYS is the latest state highway department to realize the value of a public information service.

"You can't get any information out of the highway department", used to be a fairly accurate statement, chiefly because Idaho's highway engineers were busy people. Nevertheless, their preoccupation often forced newspaper editors and private citizens to guess. Some of the guesses did the Bureau of Highways no great service.

Compared to states like New York, California, Massachusetts, and others with tremendous population centers, Idaho and its highway department are at the opposite end of the scale. The need for better public information couldn't be argued in the more populous states. But how would the service work in Idaho? Could it be justified?

"Yes," said State Highway Engineer E. V. Miller, who had previously seen what it could do in Arizona. Miller then went on to explain a possibly new concept of public information as it applies to the smaller state highway department.

"Here in Idaho, our engineers have just achieved a top pay scale in keeping with the job they're doing," he said. "We're proud of that accomplishment. We have good engineers, but they're not too numerous."

"Can't a public information department justify itself many times over if it does nothing else but save time for these key men?" he asked. "Think of the countless hours engineers spend giving out information and doing many other things a public information department can do just as well. Now that time can be saved for engineering, and we've got public information in the hands of a specialist who knows best how to put it out."

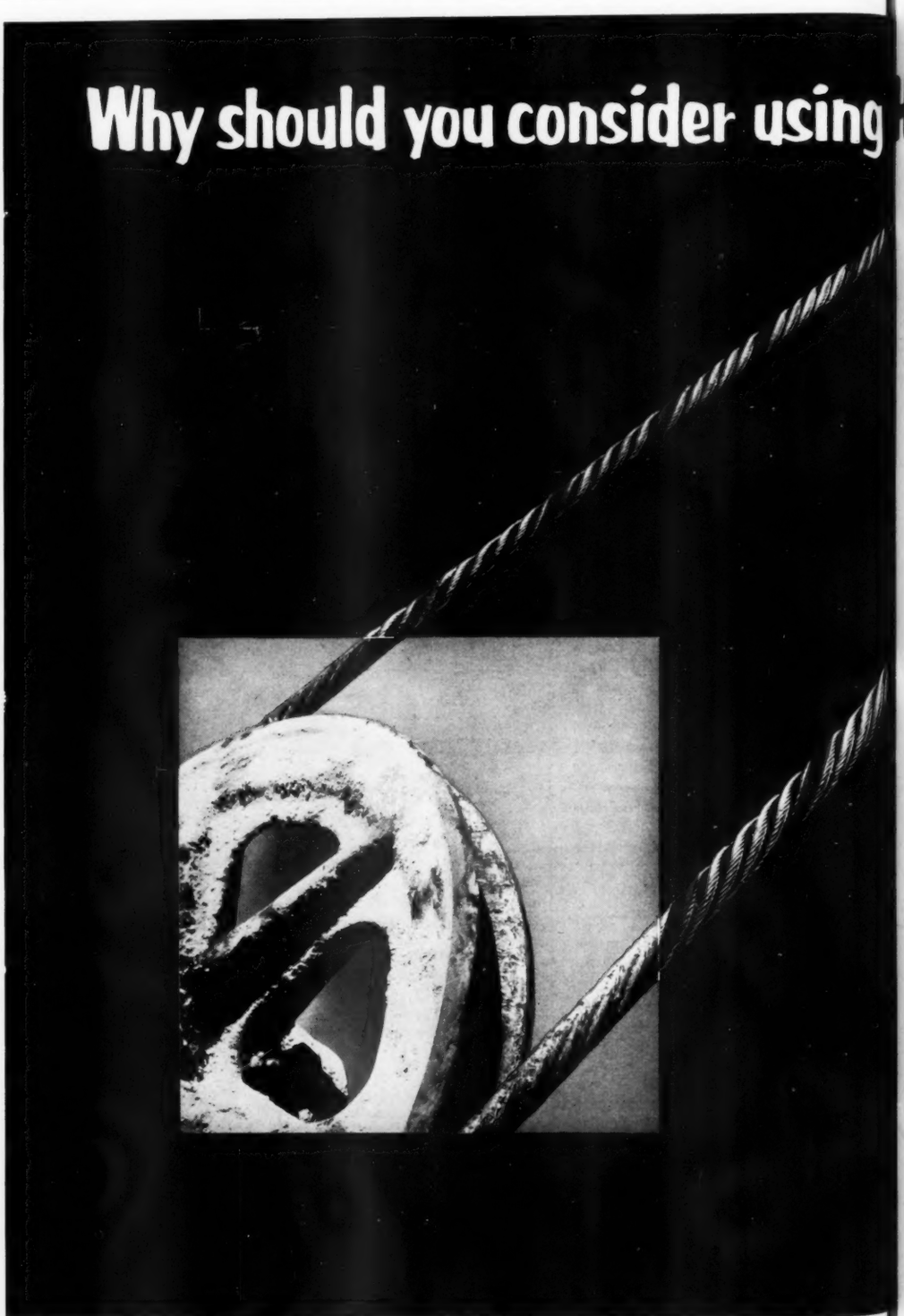
To show how a public information program produces results even in a smaller state like Idaho, newspaper editors from all over the state have started telephoning the service occasionally to get the facts about a story. They have learned already that the integrity of the Bureau of Highways can be depended upon. They know now that it is no longer necessary for them to guess.

Engineers have been aware for a long time of the importance of getting factual information to people who pay the bill for highways. And, in a vague sort of way, they believed a public information program would produce traceable benefits, both for the public and the highway department.

No better proof of these beliefs can be given than Idaho's story of its sufficiency rating system. It is well known that the sufficiency rating system, in its early stages, was jointly formulated in Arizona by the Arizona State Highway Department and the Bureau of Public Roads. Earle Miller was probably one of the men most instrumental in working it out at that time. Since then, the sufficiency rating system has been hailed nationally as a common sense engineering yardstick for measuring a highway's reconstruction priority.

Not until Idaho got a public information service was its sufficiency-rating story told to its residents. When the story went out, backed by a radio interview-type script, public

Why should you consider using



Left to right, State Highway Engineer E. V. Miller and Public Information Officer Art Sherwood of the Idaho Highway Department examine an album of highway news stories used by Idaho papers, and prepared with the assistance of the public information service. *Ray Day Photo*

response was huge. People in every section of the state hailed the system as a fair measure of highway obsolescense. In some cases these were the same people who, from a previous lack of understanding, were harshly critical of their Bureau of highways.

Department Six Months Old

Idaho's public information department is still a fledgling. It was formed in December, 1952. By the time this is published, it will still be less than a year old.

Organization of the department came about through a combination of circumstances. Idaho's road system and the traffic counts on its highways had reached a point where road construction and maintenance was one of the State's big public industries. Too, not enough was known generally by the public about the damage Idaho's overloaded trucks were doing to the transportation network. A contemporary recognition of public information as a highway engineering responsibility by the American Association of Highway Officials may also have helped Idaho make a decision. And demands for engineer's time by legislators, newspapermen, and visitors further influenced Miller and the three members of the board of directors to see the wisdom of starting the public information service.

Art Sherwood was hired to form the one-man department. Sherwood is a graduate in journalism from South Dakota State College and brought a 12-year background in Chamber of Commerce work to the Idaho Department of Highways. His job is reflected in his title, "Public Information Officer". The title and the department carry no connotations whatever of publicity, public relations, propaganda, or high pressure salesmanship. Sherwood's responsibility is to know and furnish factual information to Idaho's population.

Routine Working Department

Sherwood's information service is designed mainly for the readers of 81 weekly newspapers within the state. The weekly newspaper is still the news communication media in many small towns. While radio has a definite place, information given to the weeklies is widely disseminated. A recent story on Idaho's improved sign system for highways, which was illustrated by a montage of actual signs, got 51 per cent acceptance from the interested editors.

Another picture story was on the red jackets and caps to be worn by department flagmen. The apparel was modeled, and this story received an even better reception than the one on signs.

Sherwood's typical weekly activities consist of covering and writing whatever news features arise, of helping the Department of Highways photographer plan pictures which can be tied in with news stories, and of helping visiting newspapermen and other individuals seeking information. His news stories for weekly newspapers may tell of new highway work, contract awards, contractor and resident engineer backgrounds, or new construction techniques. An improved scaffold made in the form of a basket for bridge painters was the subject of a

(Concluded on next page)

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Why indeed. Aren't all wire ropes alike? They look alike. Why should you choose HERCULES Red-Strand rather than any other?

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In a word, it is *quality* . . . higher-than-rated quality. This is the *something special* in HERCULES Red-Strand wire rope that means *longer-than-expected* service . . . year in, year out.

It *pays* to choose HERCULES Red-Strand. Use it and see.

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HIGHER-THAN-RATED QUALITY

New Highway Service

(Continued from preceding page)

recent story. It was released in January when Idaho was half covered with snow and ice, but weekly newspapers played it big. Part of the papers' willingness to accept articles is attributed to the fact that the public information department furnishes newspapers with mats for any pictures. This means a saving in time and money for the editor.

Plans are being made for enlarged activities. Because news stories are consistently written straight, without any editorializing, Sherwood wants to get a weekly column started which can carry the ideas of State Highway Engineer Miller and other engineers directly to the people. Tape-recorded radio interviews on subjects of highway interest now appear likely. The Bureau of Highways is being combed to uncover public speakers, and if any district engineers, resident engineers, or department heads show any inclination for speaking, they may find themselves before service clubs more often than they have in the past.

The public information department is also preparing a clever single-sheet handout, which will be distributed through flagmen, to reduce accidents in construction or maintenance sections. The sheet urges caution, tells why the work is being done, details what it will accomplish, thanks the motorist, and shows a few of the vicinity's places of interest on a map on the back page.

Policy-wise, Miller is urging proper recognition of Department of Highways employees who do something outstanding. Resident engineers particularly are being urged to cooperate with local newspaper editors as much as possible. Sherwood is starting to visit with every weekly newspaper editor in the state. A monthly magazine for highway employees has been started.

These are all routine, common sense approaches to the business of telling the public what it should know about the highway picture. Already there are many indications that the program is being well received. In a recent condemnation case, for example, the opposition wilted when information was presented to the public on an impartial, factual basis. Miller reports not a single criticism regarding the start of the new department.

"I guess it all proves something we've really known for a long time," he said. "Public information will work as well in Idaho as it does anywhere else. Or to put it another way, the lack of public information will bring the roof down on your head as frequently!"

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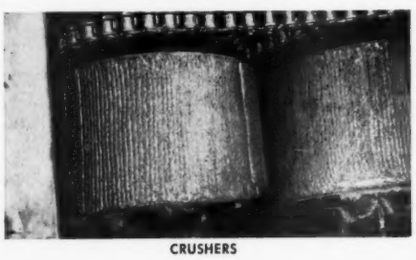

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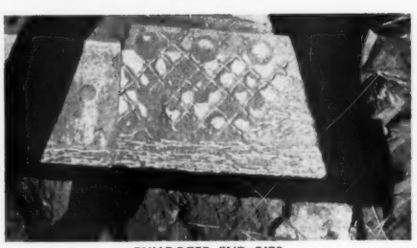

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Air-Cooled Engines

■ The Wisconsin line of air-cooled engines is illustrated in literature from the company. The booklet describes small single-cylinder engines rated from 3 to 6 hp, larger single-cylinder engines from 6 to 9 hp, 2-cylinder models from 7 to 14.6 hp, and V-type 4-cylinder engines from 15 to 36 hp. The manufacturer points out that the large number of engines offered in this range makes it possible to choose the appropriate power unit for a given piece of equipment.

The engines can be supplied with built-in clutch assembly, speed reduction, combination clutch and reduction, and electric starting. Some of these extra equipment assemblies are illustrated in the booklet.

All standard model Wisconsin engines have an extended crankshaft mounted on Timken bearings so that pulleys, gears, or sprockets may be mounted directly on the crankshaft without the need for a close-coupled stub-shaft.

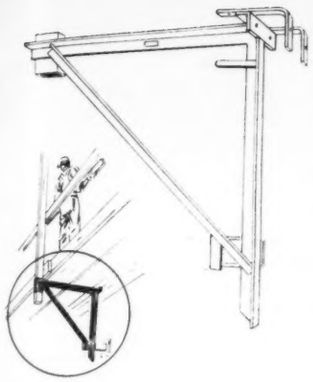
Complete specifications, power curves, and engineering drawings illustrate the engines. Photographs show the engines in a large number of uses at different power ranges.

This literature may be obtained from the Wisconsin Motor Corp., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 723.

Rubber-Tired Tractor

■ The Caterpillar rubber-tired Model DW10 tractor is illustrated in an 8-page booklet published by the company. Using 12 photographs for illustration, the booklet shows the unit at work hauling scrapers, wagons, and a sprinkler. It also shows the tractor being used with a bulldozer attachment.

To obtain this literature write to Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 834.



Scaffolding Equipment

■ An all-steel waler jack is made by the Superior Scaffolding Co., 5624 Bankfield Ave., Culver City, Calif. The waler jack can be bolted to the wall or stud and is used on either 2 x 4 or 2 x 6 walers.

A feature of this piece of scaffolding equipment is its double hook which slips over the waler to make a firm grip to prevent sidesway.

This waler jack is manufactured in the east by National Plaster Block Co., 2236 N. 27th St., Philadelphia 32, Pa.

For further information write to the company, or use the Request Card at page 18. Circle No. 765.

Small Gas Engine

■ A new gas engine is announced by the Lauson Co., New Holstein, Wis. The P-25 engine is recommended by the manufacturer for pumps, power saws, conveyors, concrete mixers, and road equipment.

Developing 3.70 hp at 1,800 revolutions per minute, the engine has a peak rate of 6.30 hp at 3,600 rpm. The new air-cooled engine has an outside magneto with impulse coupling.

Both the crank shaft and the connecting rod are of heat treated drop-forged steel. The replaceable steel-backed connecting-rod bearing liners are babbit lined. The fly ball governor runs in oil. Power take-off pad drilling and the base mounting are optional.

For further information write to the company, or use the Request Card at page 18. Circle No. 711.

Data on a Portable Pump

■ A portable, self-priming, 1½-inch centrifugal pump that delivers 4,000 gph is shown in literature from the Rice Pump & Machine Co., 220 N. Milwaukee St., Grafton, Wis. A sectional view of the pump illustrates construction features that affect performance.

Among the chief features are automatic priming and a built-in suction check valve that prevents water from running out of the suction inlet. The pump is designed so that water flows to the impeller in a direct line. There are large openings and no sharp turns so that friction is reduced. The open-type impeller handles water with a large percentage of stone, gravel, and other solids. The pump is available with a Briggs & Stratton engine.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 786.

Construction to Start On Hampton Roads Project

More than 27 structures, ranging from small river bridges to high-level trestles, are involved in the 21-mile Hampton Roads Crossing project in Virginia, which has been designed by Parsons, Brinckerhoff, Hall & Macdonald, consulting engineers of New York City. In addition to combining bridges and highways, the job will include a subaqueous tunnel under Chesapeake Bay at Hampton Roads to provide a connection from Warwick City to Norfolk, Va.

The tunnel, 1.3 miles long with 2.3 miles of trestle approaches, will have a 23-foot roadway. Its portals will be built on man-made islands constructed from material dredged out of the bay. A 24-foot roadway will be constructed from Route 168 to the tunnel's north approach, and provisions will be made for adding a dual 24-foot roadway if traffic warrants it. The trestle approaches carry a 34-foot roadway. The south approach to the tunnel will follow an existing dual highway that will be widened to provide 30-foot roadways. A section of this road will be depressed to underpass existing streets. Maurice N. Quade is partner in charge for PBH&M.

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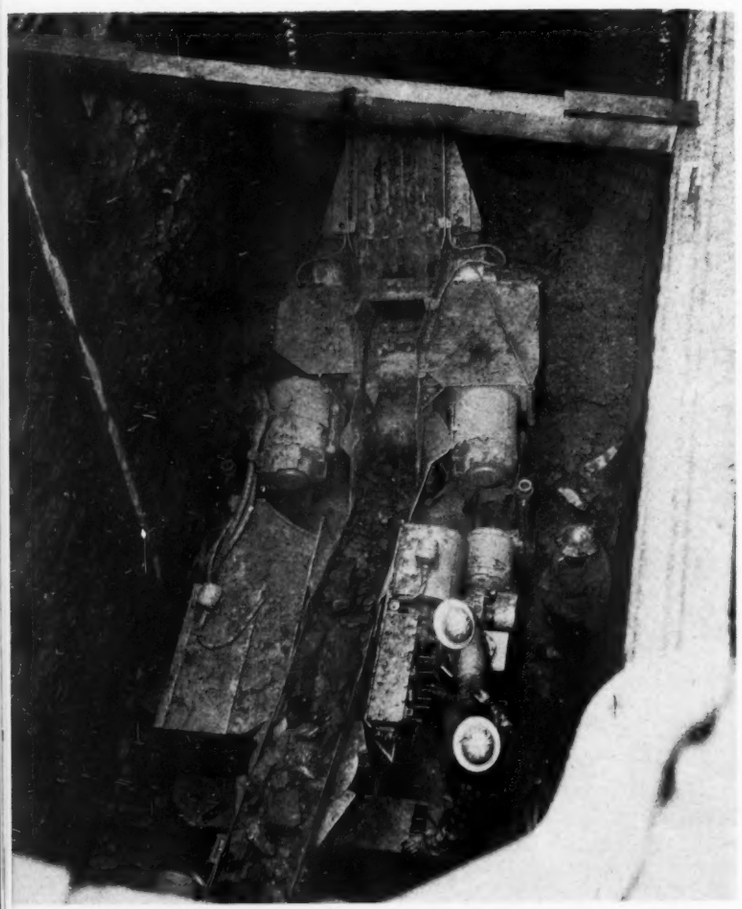
Coal-Mining Rig Digs

This continuous mining machine built by Joy Mfg. Co. is about to be lowered into a special shaft where it will dig a 10-foot-diameter sewer tunnel for the City of Euclid, Ohio. Blasting was stopped when residents complained of damage to their homes.



Now in position at the bottom of the shaft, the Joy mining machine begins to claw its way through the shale. Carbide-tipped chains on the cutting head tear off chunks of shale and send them back to the side swing conveyor which loads muck cars.

WHEN STRONG PROTESTS from local homeowners forced officials of Euclid, Ohio, to prohibit further blasting on the City's 4,000-foot sewer tunnel, many authorities had little hope of seeing the job reopened as anything but a long and costly open-cut operation.

Conventional drilling and blasting work had been underway only a few days by the National Construction Co., Inc., of Euclid when residents in the work area complained of extensive damage to their homes. The situation became so tense that neighborhood groups even began to picket the job carrying signs such as "IS THIS KOREA?"—"STOP BLASTING, SAVE OUR HOMES!"—"NATIONAL DESTRUCTION CO.", and others.

Finally, on January 5th, after only three weeks of work, the job was closed down. But almost immediately, representatives of both the city and the contractor went into a huddle to develop some solution for the tough problem. They knew that further blasting on the south half of the tunnel could not be permitted. However, an open cut would be an extremely difficult and expensive alternate method. Not only would an existing street have to be torn up and later replaced, but several large utility ducts passing across the tunnel line only a few feet below ground level would seriously complicate the problem.

Coal-Mining Machine

Then, the idea was brought up to investigate the possibilities of using a coal mining machine to dig the shale tunnel. It was stressed, however, that such a machine would have to be small enough to fit in a sewer tunnel, yet big enough to do continuous and simultaneous digging, mucking, and loading.

Subsequent tours through mechanized coal mines in surrounding states turned up several machines, but most of them were too large, or else specialized in only one phase of the mining operation. Finally, a 25-foot-long continuous mining machine was observed in a West Virginia coal mine, and the contractor asked the manufacturer for a demonstration. The self-propelled unit, made by the Joy Manufacturing Co., was about the proper size and looked as if it was worth giving a chance. Consequently, National Construction Co. brought one of the 25-ton machines, lowered it intact into a specially built shaft, and today it is clawing through the shale under Euclid at an impressive rate. In fact, when CONTRACTORS AND ENGINEERS visited the site in June, the Joy miner was excavating and loading 80 yards of muck every 8-hour day.

Crawler Mounted

Crawler-mounted and electrically powered by seven Reliance motors, the unit consists of three primary sections—a cutting head, a stationary conveyor belt, and a swing-type loading conveyor.

The cutting head has six fast-moving parallel chains fitted with a total of 360 carbide-tipped detachable teeth. It pivots horizontally up to 45 degrees in each direction, moves forward 18 inches, and swings vertically in a near half-circle. This extreme flexibility permits the head to remove up to 18 inches from the full face of the bore without any change in position of the crawlers.

Here's how it works. The cutting head first digs downward and into the base of the bore forming a pocket. Then it gradually swings upward and the claws tear off chunks of shale and send them back on the chains to the stationary conveyor. Here, the material is carried a few feet and transferred to the elevating side-swing belt conveyor that loads the cars. As soon as one car is

The side-swing conveyor on the rear of the machine loads a muck car. Production averaged 80 cubic yards of shale every 8-hour day. Robert Gaudio, who supervises the operation, looks on. *C. & E. Photo*

Here is the main shaft through which equipment and materials are carried to and from the bore. A Spencer reversible blower ventilates the tunnel through Naylor 10-inch pipe. *C. & E. Photo*

Rig Digs Sewer Tunnel

When blasting protests force job to shut down, contractor uses self-propelled boring machine

loaded, the operator quickly swings the conveyor over an empty car that waits in position on the parallel track.

To reduce dust during cutting, a Joy 450-psi pump, located at street level, pumps water to several spray nozzles on the head. The only other equipment in the tunnel are Pattin roof bolts set into the middle and near the corners of the roof.

The $1,000,000 job originally called for removing about 19,000 cubic yards of rock for a 10-foot finished diameter sewer, lined with three rings of brick. A financial adjustment between the City and the contractor was made to permit the use of the mechanical miner. Storm water drainage to Lake Erie is the primary purpose of the project. The tunnel begins at a junction with an existing 7-foot sewer and drops on a 0.6 per cent grade to a 60-foot-wide headwall on Lake Erie.

National moved in during November, 1952, and began by excavating an 18 x 20 shaft near the middle of the tunnel. Timber sheeting and bracing followed the excavation until a 30-foot-deep cut was made.

Drilling and Blasting

The south heading was then started using full-face shots. Holes were drilled in a concentric circle pattern using two Cleveland drills mounted on a Le Roi jumbo. The 6-foot-deep holes were drilled by first using 3-foot steel with 1⅞-inch Timken bits and then 6-foot steel with 1¾-inch bits.

The number of sticks ranged from 1 to 5, with the more heavily loaded holes at the bottom. Up to 11 delays were used to pull a minimum of 5 feet with each shot.

When the protests began to mount, both the pattern and the loading were changed several times to reduce the shock. Another cushioning method required the drilling of a 24-inch hole into the center of the bore. Seismographic tests had shown that the first blast, designed to pull out a tapered core section, was the most severe. By using a McCarthy drill to open up the center, this tapered core was blown out with less shock.

However, when continued vibration tests showed that the theoretical danger area occasionally crept near certain homes, all blasting was discontinued.

When the mining machine permitted the job to reopen in June, blasting was permitted in the north section of the tunnel because homes in that area were not affected.

Here's how the job is handled: after each shot, the fumes are exhausted through a 12-inch Naylor pipe suspended from the roof. A Spencer blower, powered by a 40-hp electric motor, completely exhausts

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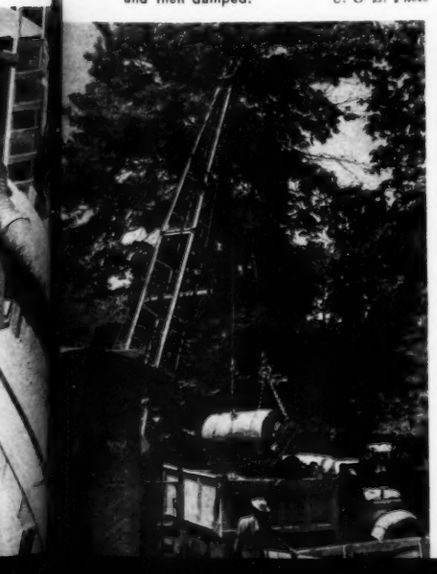
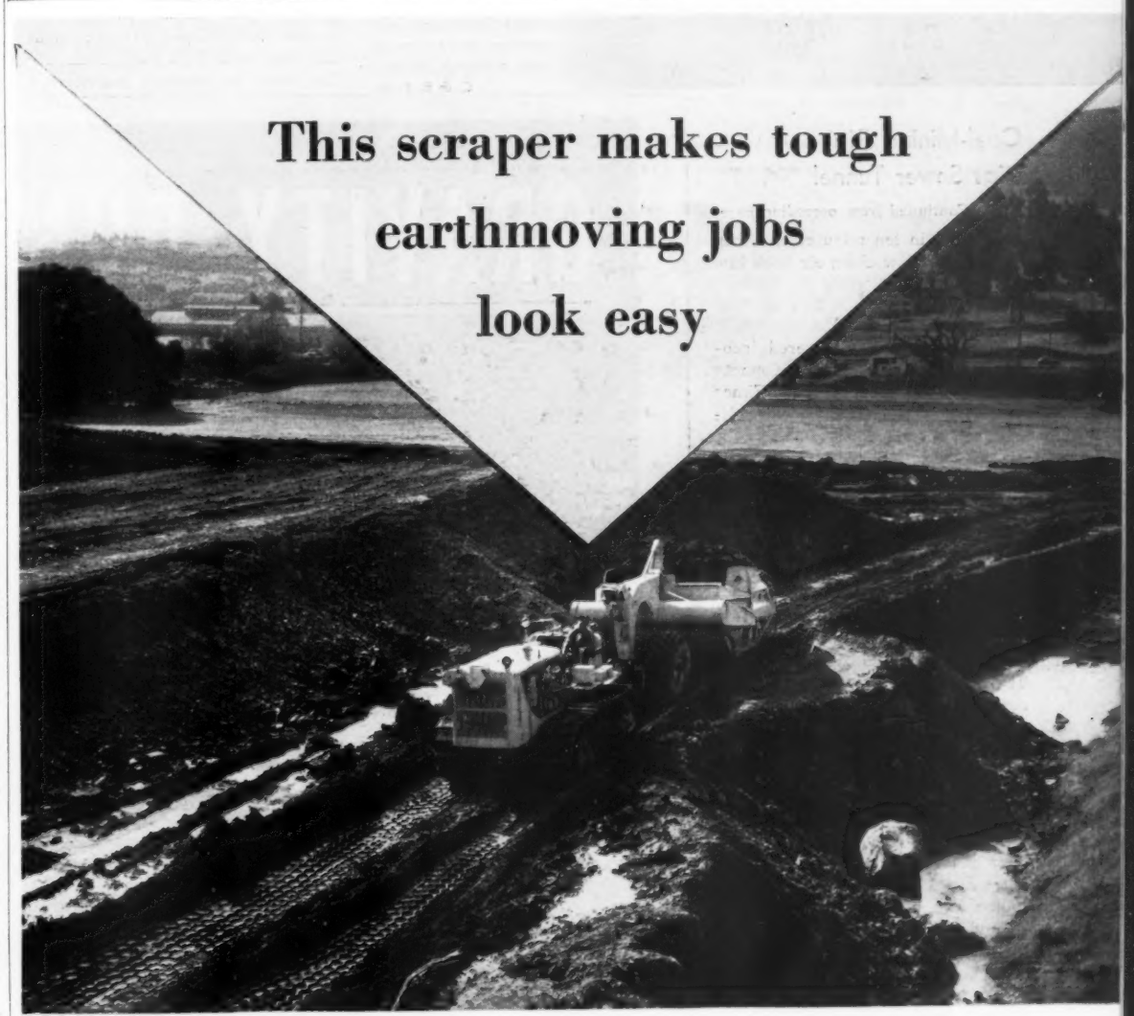
An Insley bucket is hoisted by this Bucyrus-Erie crane, a line hooked into the bottom, and then dumped. *C. & E. Photo*





WORKING on a contract that called for moving 395,000 cubic yards of rock and clay and grading a 70-acre industrial site in 5 months' time, J. O. Archibald of Redwood City, California, needed rugged equipment with plenty of power and capacity. The terrain was half hill and half swamp. Fourteen Caterpillar Diesel Tractors, with Bulldozers and Scrapers, were used in completing the contract, for Mr. Archibald believes in standardizing on big yellow equipment. But he found one of the most efficient units for this type of job was the Cat* D8 Tractor-No. 80 Scraper combination.

The flat-bottom No. 80 is a brute for work. It handles 20 cubic yards heaped on every swing. Positive cable controls permit easy, accurate control of digging and spreading. Big tires give ample flotation in soft ground, and make hauling smooth. The push-plate, extending well back of the tires, allows in-line power for the pusher.

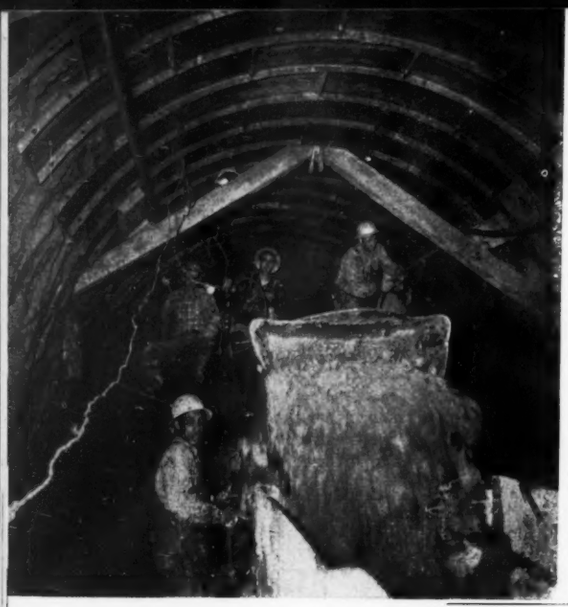
The surest way to *prove* what the No. 80 Scraper can do for you is to see it in action on your own job. Your Caterpillar Dealer will gladly arrange a demonstration. Call him today.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE



In the north end of the tunnel, where conventional drilling and blasting methods are still being used, an Eimco mucker loads a car as workmen set roof supports and liner plates. *C. & E. Photo*

Coal-Mining Rig Digs Sewer Tunnel

(Continued from preceding page)

the tunnel in ten minutes and then reverses to blow clean air back into the hole.

Mucking

The Atlas battery-powered locomotive then pushes a line of empty Insley bucket-cars and an Eimco mucker down the single track to the heading. After a car is loaded by the air-powered Eimco, the locomotive pulls it back beyond the Canton car passer, an empty is pushed by hand from the passer onto the track, the train pushes it up to be coupled to the Eimco, and the operation is repeated.

As the muck is loaded, workmen go up on the muck pile and trim the circular walls with clay spades. Then they brace the roof with Truscon steel liner plates supported by 6x6 timber A-frames notched into the shale every 10 feet. The 16-inch-wide curved liner plates are bolted by hand with an alternate spacing of 4 and 3 plates per ring. When all the muck is out and the liner plates set, the Eimco is hoisted out by a Bucyrus-Erie crane, the jumbo and drills are pushed back in, and the process is started again.

Brick work is done on the night shift. Generally, one night is spent on the invert and the next night on the arch. Bricks and mortar are lowered through the shaft with the crane and hauled in trains. About 12 feet of tunnel is bricked every shift.

Personnel

Charles Reyner is chief engineer and secretary of National Construction Co., Inc. Anthony Gaudio is general superintendent, Harry Gaudio is in charge of the drilling and blasting, and Robert Gaudio directs the operation of the Joy miner. City Engineer of the City of Euclid is Leroy Williams.

UA Cement Promotions

Two promotions have been made by the Universal Atlas Cement Co., a United States Steel Corp. subsidiary, 100 Park Ave., New York 17, N. Y. Charles B. Baker is executive vice president and Donald C. Leo has been named general attorney.

PCA Appoints Engineers

Everett C. Crites and James W. McKnight have been appointed regional highway engineers of the Portland Cement Association, Chicago, Ill., and will assist state, Federal, and municipal engineers on the design, specifications, and construction practices for concrete roads, streets, and airports. Mr. Crites will serve the states of Missouri, Iowa, Minnesota, North Dakota, Montana, Kansas, and Nebraska; while Mr. McKnight will work in Delaware, Maryland, Pennsylvania, Ohio, and West Virginia.

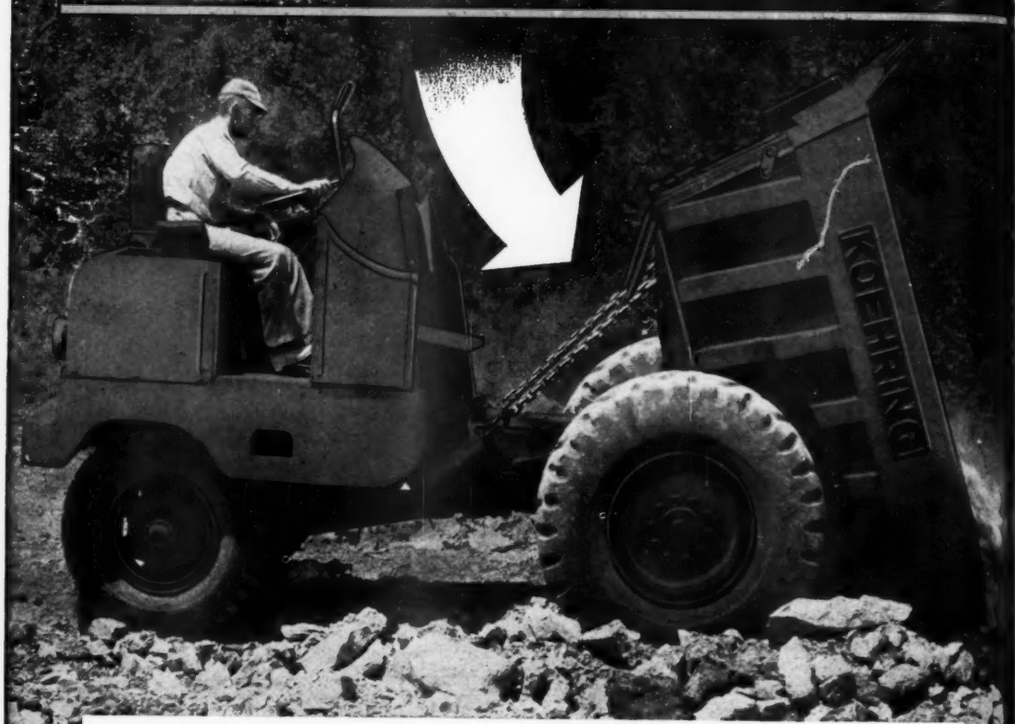
Mr. Crites joined the Association in 1929. He has served as a field engineer and consultant to various governmental agencies on buildings, houses, and bridges. Mr. McKnight has been with PCA since 1941. He has been an assistant engineer of surveys and highway design, and a construction inspector and design assistant.

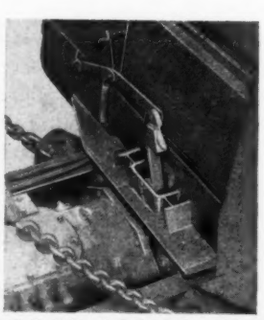
W. J. McIntosh has been appointed district engineer of the New York office, and will direct Association activities in New York, New Jersey, and Connecticut. Mr. McIntosh joined the PCA staff in 1946 and has served as field engineer and regional highway engineer in the Philadelphia and Columbus districts. He succeeds John F. Hall.

Charlton Joins Ferguson

E. A. Charlton, associated with the paper industry for 35 years as an executive and consultant, has joined the engineering and building firm of H. K. Ferguson Co., 11th at Walnut Ave., Cleveland 14, Ohio, and will serve in an executive capacity.

GRAVITY DUMP eliminates





SIMPLE BODY RELEASE LEVER WORKS *INSTANTLY*

1 Body release lever is located in cab to left of steering wheel. Lever engages toggle linkage to latch hook on chassis . . .

2 Trip rod instantly releases latch hook from body latch seat on the tilting Dumptor body. Gravity dumps load instantly as . . .

3 Body rolls on heavy-duty rockers. Snub chains attached to big coil spring shock absorbers check body at 70-degree tilt.

KOEHRING HEAVY DUTY

Truck-Mounted Ditcher Has Folding Boom

■ A truck-mounted ditching machine that features a hydraulically controlled jack-knife boom is announced by Owen-Pewthers Mfg. Co., 2600 Nottingham, Houston, Texas. The chief advantage of the boom arrangement is that it reduces head room needed for the machine so that it may travel beneath an underpass or other obstacles high enough to clear the truck. With the new boom, the bucket line may be extended at an angle behind the machine to start the ditch flush against walls and embankments. When digging along a slope, the boom and bucket line remain in a vertical position to maintain the original vertical ditch walls regardless of the angle at which the truck is running.

The Owen-Pewthers Earthripper.

The standard Earthripper digs ditches from 8 to 24 inches wide-, up to 6 feet deep. A machine with 8-foot digging depth may be had on special order.

The ditcher gets its power from the truck motor through a transmission system that permits the differential of the truck to be synchronized with the bucket line. Digging speeds range from 1 to 44 feet per minute.

For further information write to the company, or use the Request Card at page 18. Circle No. 802.

Line of Wood Panels Offers Varied Surfaces

■ The various types of Masonite Presdwood are compared in new literature from the company. The basic Presdwood type is a homogenous grainless panel composed entirely of wood fibres without artificial binders or fillers, and is recommended for interior uses. Another version of the board, Panelwood, is somewhat less dense and is intended for applications when a light, rigid panel without the hardness and strength of the standard type is needed. Tempered Duolux is subjected to a special manufacturing process to give it added strength and improved surface characteristics. Both surfaces are smooth.

The tempered type of Presdwood is impregnated with a special tempering liquid polymerized by baking so that physical properties are improved and resistance to moisture and wear are increased. Special tempered panels include a black Presdwood, a Leatherwood board with simulated Spanish grain leather surface, and Temprtile, similar to Duolux but with lines forming 4 x 4-inch squares impressed into one surface.

The literature describing the specifications and working characteristics of these products is available from the Masonite Corp., 111 W. Washington St., Chicago 2, Ill.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 737.

Engineering Firm Opens

The new engineering and surveying firm of Hills, Hesslein & Dodge, has opened offices at 592 Pine St., Manchester, N. H. The organization will do general surveying and engineering of all types, and will make survey parties available for work throughout New Hampshire.

Associates in the firm are John T. Hills, M. E., formerly with the Nashua Corp.; Richard A. Hesslein, C. E., formerly with the George A. Fuller and Stone & Webster organizations; and Dana G. Dodge, C. E., formerly with the U. S. Army Corps of Engineers and the Massachusetts State Highway Department.

Motter Purchases O. K.

Purchase of the O. K. Clutch & Machinery Co., Columbia, Pa., by John C. Motter Printing Press Co., has been completed, and sales and manufacture of the O. K. line of compressors, hoists, and portable elevators will be carried on through the O. K. Machinery Division of the new company, Columbia, Pa.

James L. Ealy, Sr., will be general manager of the division, and will be assisted by Charles H. Druschel who has been associated with O. K. since 1927 in various capacities. Mr. Ealy has had long experience in manufacturing operations with various organizations.

body hoists

Koehring Dumptors have no slow-working body hoists. You trip the release lever and gravity dumps the 6-yard load in one second.

Cuts maintenance costs . . . there are no complicated mechanical hoists to slow up haul cycles . . . no expensive hoist replacement parts, maintenance or down time to eat into your profits. And gravity dump is always instantaneous, trouble-free in all temperature extremes . . . never wears out.

No spring maintenance is another money-saving advantage you get with Koehring Dumptors. There is just one big, double-coil chassis spring on steering axle . . . none on driving axle. Big shock-absorbing drive tires eliminate need for more springs . . . save spring maintenance time and replacement costs.

Check your body hoist and spring maintenance costs for a year . . . see how much you will save when you haul with heavy-duty Dumptors. In addition, Koehring constant-mesh transmission gives Dumptor the same 3-speed travel forward and reverse for "no-turn" shuttle hauling . . . increases production and your profits.

Get complete facts and figures from your Koehring distributor . . . or write to us for informative 28-page Dumptor® catalog.

KOEHRING CO.

Milwaukee 16, Wis. Subsidiaries:
PARSONS • KWIK-MIX • JOHNSON

CK 234 REV.

9¾-ft.-per-min. Parsons 250 Trenchliner®

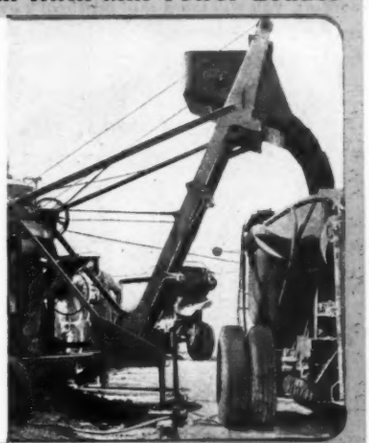
With 30 digging feeds, Parsons 250 Trenchliner produces up to 9¾ feet of clean-cut trench per min. . . . digs 16" to 42" wide, up to 12½ feet deep . . . cuts within 11" of either side. Reversible spoil conveyor shifts through machine by power in less than 1 min. to dump right or left. Constant discharge height speeds loading into trucks. Larger and smaller models are also available . . . contact your Parsons distributor now.

PARSONS (Koehring Subsidiary)
Newton, Iowa

9'-1" discharge with Kwik-Mix Tower Loader

This Kwik-Mix Tower Loader fits 11-S and 16-S Dandie® concrete mixers, discharges at 9'-1" into trucks, overhead hoppers, or stockpiles. Bucket holds full batch, is powered by mixer engine and dumps automatically at top of tower. Also available for Kwik-Mix No. 10 and 14 bituminous mixers. Get complete information from your Kwik-Mix distributor, or send for literature on low-cost, time-saving Tower Loader today.

KWIK-MIX (Koehring Subsidiary)
Port Washington, Wis.

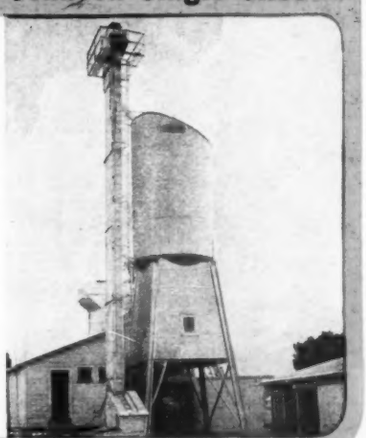


254 to 611-bbl. Johnson Single Silos

In various sizes of 11' and 12' diameters, provide 254, 373, 492, 611-bbl. and larger cement storage. Gasoline or electric-driven screw conveyor and bucket elevator, box-car, truck receiving hoppers or undertrack unloading arrangement, electric bin signals, aeration diffusers, one or two 1000-lb. batchers. Larger batcher, added leg and elevator height availble for mix truck charging. Silos are 1-piece, all-welded.

C. S. JOHNSON (Koehring Subsidiary)
Champaign, Ill.

X89



Reactivating Powder Plant Is Major Job

Three-year rehabilitation project costing $44 million puts Badger Ordnance Works back into production

WHEN WORLD WAR II ENDED in 1945, the Badger Ordnance Works at Baraboo, Wis., like many other war production plants, was put in mothballs as quickly as possible. Today, getting it out of the mothballs and back into production is a $44,000,000 job for the Corps of Engineers and the Fegles Construction Co., Ltd., Minneapolis, Minn.

The rehabilitation which began in February, 1951, has already put a substantial part of the plant back into operation. This work will be completed by the end of this year.

Badger Ordnance Works was constructed in 1942 at a cost of approximately $125,000,000 to help meet the war emergency demands for propellant powders. Throughout the war it was operated by Hercules Powder Co. and produced powders for all types and sizes of arms from the carbine to large artillery pieces and rockets.

When the war ended, however, operating contracts were terminated, and the Ordnance Corps assumed responsibility for maintaining the Badger Ordnance Works on a standby basis.

No Funds For Maintenance

During the six years following the war, funds appropriated for maintenance of the plant facilities were so inadequate that only limited maintenance could be done. Road surfaces deteriorated, railroad ties rotted out, and wooden buildings decayed.

Then in 1951 came the demand for more propellant powder. The Badger plant was needed again, but lack of maintenance had taken a heavy toll. To get the plant running, Fegles Construction Co., Ltd., was called in and given a contract for work that will cost over $44,000,000.

The plant is housed in a series of light frame structures, many of them mere shells not even lined on the inside. Where the materials being processed are handled in a wet state and there is little or no danger of explosion, the buildings are spaced rather close together and are relatively large. For the finishing processes and where there is greater danger of explosion, the units are small, widely separated, and in most cases surrounded by barricades of wood and earth. In case of explosion within any one of these barricades, the force of the blast is diverted upward and the damage to other facilities is minimized.

Rebuilding Barricades

Repairing the barricades around the buildings presents somewhat of a problem. A typical barricade surrounding a small building measures about 75 by 100 feet on the outside and is about 30 feet high. At the bottom it is 12 feet thick, and at the top 4 feet thick, the batter being entirely in the outside face. The barricade consists of a wooden

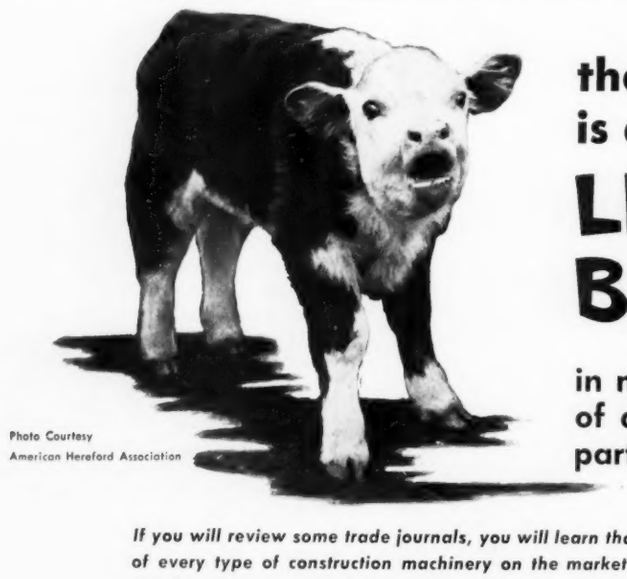
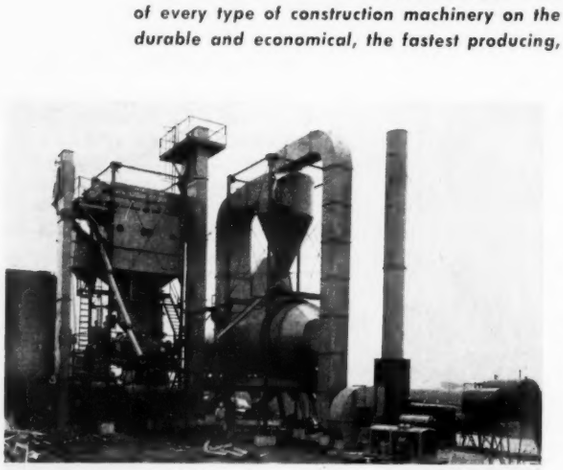


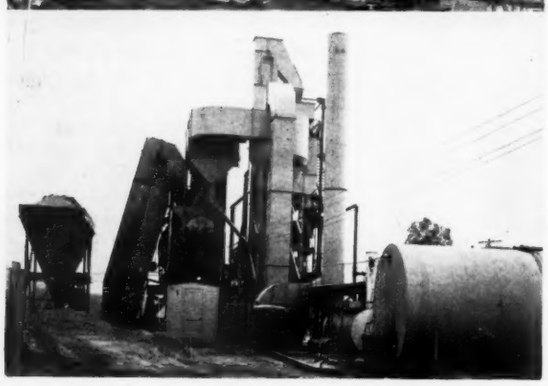
Photo Courtesy
American Hereford Association

there is a LITTLE BULL...

in most all advertisements of construction machinery—particularly Asphalt Plants

If you will review some trade journals, you will learn that practically every make of every type of construction machinery on the market is the most dependable, the most durable and economical, the fastest producing, and the most accurate.





AN ASPHALT PLANT, "A LIFETIME INVESTMENT," IS TOO IMPORTANT TO BUY ON "SALES TALK" . . . IN ADVERTISEMENTS OR BY SALESMEN

To get the *facts* about all makes of asphalt plants, talk to the men who own them and the men who run them.

Any Simplicity Plant or Simplicity Plant Owner will do a much better job of convincing you that Simplicity is the very best, than all the "bull" our advertising agency can write or our salesmen can shoot.

But to justify the expense of this ad we must still "shoot the bull" by saying SIMPLICITY is the most DEPENDABLE, DURABLE AND ECONOMICAL ASPHALT PLANT EVER BUILT —THE FINEST MONEY CAN BUY.

THE SIMPLICITY SYSTEM COMPANY
DIV. OF WEST CONSTR. CO.
RIVERSIDE DRIVE
CHATTANOOGA, TENNESSEE

P.S. *Write us for location of the Simplicity Plant nearest you. See it in operation; talk to the men who run it!*

Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today
OR
THE SLOPE-METER CO. EXCELSIOR, MINN.

A crushing and screening plant operates in a gravel pit near the Badger Ordnance Works project at Baraboo, Wis.

Workmen place new planking over an old barricade. Railroad and tram tracks in the foreground have been given new ties and ballast. *C. & E. Photos*

box framed with vertical 6 x 8-inch timbers, spaced three feet apart and lined on the inside with planks. The lower 12 or 15 feet is lined with 3-inch planks and the upper portion with 2-inch.

Threaded rods with large washers extend completely through the box tying the walls together. The structure rests on mud sills and is completely filled with earth. A roof keeps moisture out of the box. These barricades were originally built of plain untreated lumber, much of which has rotted out.

In most cases the 6 x 8 timbers are in reasonably good condition and can be left in place. However, the old plank lining is badly rotted. Simply removing the old planking would necessitate removing the sand fill also. Fegles found it faster and more economical to put new lumber over it.

This is done by cutting the new treated planking to lengths that will fit between the vertical timbers outside the old planking. These pieces are laid to cover the entire face of the structure between the 6 x 8 uprights, and are held in place during assembly by nailing them to the old planks. When all are in place, a vertical 4 x 6 is butted up tightly against them on each side of every 6 x 8 and spiked securely to the uprights. The original washers are replaced with punched angle-iron sections to provide bearing for the bolts against the 4 x 6 additions to the old 6 x 8 uprights.

All lumber used in this work is treated according to government specifications. Because of the different treating processes and treating materials used, some of the lumber is black, some has a green color, and some looks practically like the natural wood. Lumber is received banded in bundles on flatcars. Fegles uses a Lorain Moto-Crane to unload and stockpile the more than 18 million feet of lumber being used.

Roads and Railroads

Among other facilities requiring rehabilitation are roads, railroads, and tram tracks. Many of the original roads had a light bituminous surfacing. Age and lack of use, coupled with lack of maintenance, took a heavy toll of these roads. Many miles must be completely resurfaced. Some of the better ones are being patched and given an armor coating-type of seal coat.

Roads within the plant area carry light traffic—automobiles and pick-up and light trucks. Materials being processed are practically all transported by the railroads or trams. Most roads have a stabilized gravel base averaging 6 inches deep

(Concluded on next page)

FOR CONCRETE PLACING—OR REHANDLING, HARD DIGGING, DREDGING

BLAW-KNOX BUCKETS

Cut Costs

CHOOSE THE BUCKET THAT'S EXACTLY RIGHT FOR YOUR JOB FROM THE MOST COMPLETE AND DIVERSIFIED LINE OF BUCKETS AVAILABLE

FOR NORMAL OR LOW SLUMP CONCRETE FOR GENERAL CONSTRUCTION WORK

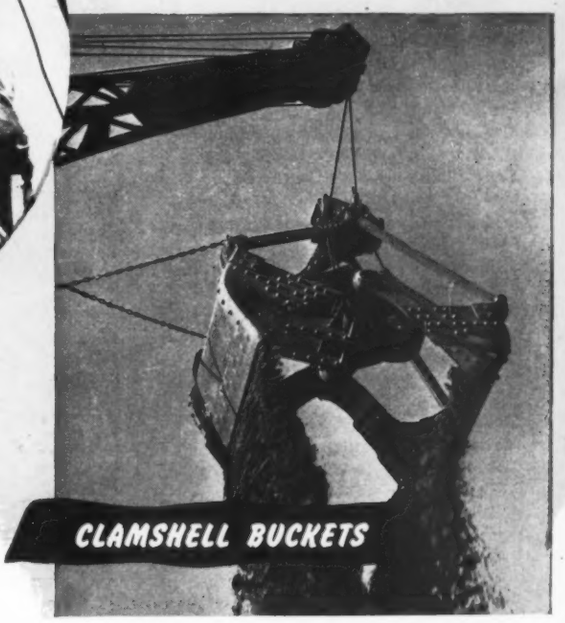
Blaw-Knox Roller Gate Controllable Discharge Concrete Buckets for use on crane or cableway can be easily opened or closed by one man, with a full or partial load of concrete. Will handle grout without leakage or the stiffest concrete with the same positive control. Sizes range from 1 to 8-cu. yds.

FOR LOW SLUMP, MASS CONCRETE SPECIFICATIONS

The Blaw-Knox CAC Concrete Buckets with air-operated clam gates are designed for high speed, economical operation on big-job specifications. They're specifically built for low cost handling and placing of harsh, low slump concrete containing coarse aggregate and air-entraining agents. Furnished in 2, 3, 4, and 8-cu. yd. sizes.

FOR EVERY JOB CONDITION . . . fluid or dry concrete, big aggregate or normal stone, any specification . . . there's a size and type of Blaw-Knox Concrete Bucket to speed your work and cut concrete placing costs. Tremie type buckets for placing concrete under water also available from 1 to 8-cu. yd. capacity.

YOUR BLAW-KNOX DISTRIBUTOR will gladly help you select the right bucket to cut costs on your job. See him today.



You can increase your crane output by using the clamshell bucket that's built for the job. Whether it's handling all classes and types of aggregates, dredging, barge clean-up—for hard digging or general purpose use, there's a Blaw-Knox Bucket that will give you the most profitable crane output on any specific operation. That's why so many contractors use Blaw-Knox engineering service—backed by many years of experience in clamshell bucket application—to help them select from the wide variety of sizes, weights and types, the bucket that meets all their requirements. Let us help you increase your crane output, too.

BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
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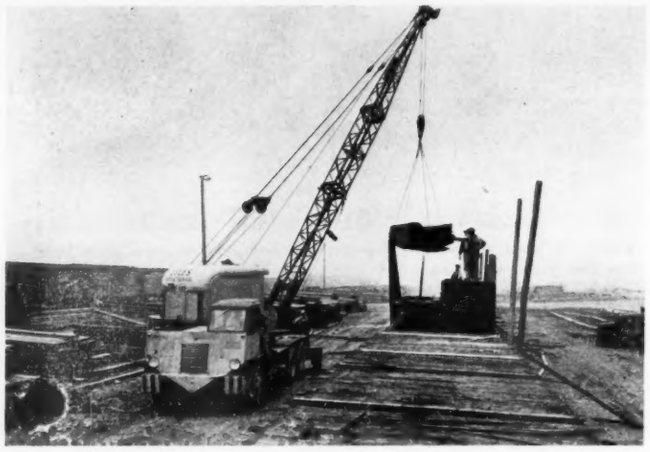
PITTSBURGH 22, PA.
Offices in Principal Cities

BLAW-KNOX

Reactivating Powder Plant Is Major Job

(Continued from preceding page)



Bundled lumber is unloaded from a flatcar by a Lorain Moto-Crane, and then stockpiled. *C. & E. Photo*

and 20 feet wide plus a surfacing of 1 to 1½ inches of plant-mixed bituminous concrete.

Most of the road and railroad work was subcontracted to Ashworth & Son, Minneapolis, Minn. Gravel roads which were badly deteriorated were first given a lift of 2½ inches of stabilized gravel, treated with 3 pounds of calcium chloride to the square yard. Pellet chloride proved economical to use and convenient to handle and store. Additional chloride was added from time to time to keep the surfaces dust-free.

A hot-mix asphalt plant was brought in, first to mix about 7,000 tons of bituminous patching materials, and later, to mix bituminous surfacing for the mat on 65 miles of roadway and several parking lots. New parking areas have an 18-inch granular subbase, 6 inches of stabilized gravel base, and 1½ inches of plant-mixed bituminous surfacing.

Gravel for many uses was produced just outside the plant area by Deppe, Baraboo, Wis. Deppe's crushing and screening plant is a home-assembled arrangement of standard units such as a 20 x 36-inch Diamond jaw crusher, a set of 42-inch Lippmann rolls, a 2-deck 5 x 12-foot Simplicity screen, and a Simplicity vibrating feeder. Power is supplied by two diesels, a 245-hp Buda, and a 165-hp Cummins. A Koehring ¾-yard shovel feeds material from the pit to the crusher. Overburden on the pit is removed by a Caterpillar D7 dozer. Eight International K7 and K8 trucks with 5-yard boxes haul from the crusher to the job.

The gravel is spread on the roads by a Caterpiller No. 12 motor grader and compacted with rubber-tire rollers. The crushed pit-run material meets specification without any waste or addition. Under favorable conditions, the setup produces and delivers over 125 cubic yards per hour.

Railroad rehabilitation consists of replacing all ties, resetting the rails to grade and alignment, and placing new ballast. Twenty-six miles of standard-gage railroad was renovated in this manner together with about 24 miles of narrow-gage tram track.

Personnel

Commanding officer of the Badger Ordnance Works is Lt. Colonel W. A. Evans of the Ordnance Corps, U. S. Army. Resident engineer for the Corps of Engineers on the rehabilitation project is C. F. Jauch. Project manager for Fegles Construction Co., Ltd., is E. E. Taylor. Resident manager for Liberty Powder Defense Corp., a branch of Olin Industries, Inc., East Alton, Ill., the operational contractor, is J. C. Stewart. The work is supervised by Colonel George Kumpe, district engineers, Corps of Engineers, Milwaukee, Wis. At the peak of employment as many as 3,300 workmen have been employed by Fegles and the subcontractors on the project.

Steam-Cleaner Nozzle

■ A new steam-cleaning nozzle is introduced by American Nozzle Corp., 30 Church St., New York 7, N. Y.

The Steam-Blaster has a flat nozzle with a center blade. This feature is said to give improved impact. The blade reduces the effect of eddy turbulence at the opening of the nozzle and creates a pressure difference between the two flat planes of steam. This produces a sharp cutting action where the planes converge.

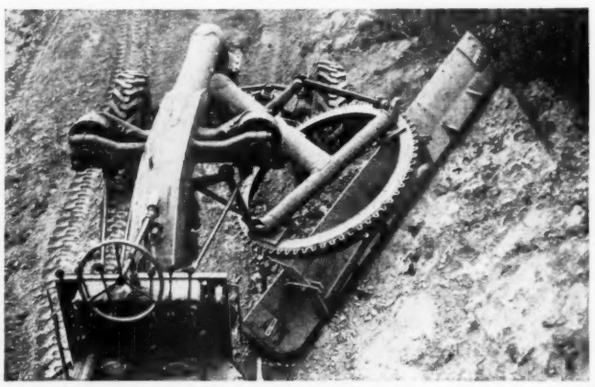
The nozzle has a bronze body and stainless steel blade. It weighs under 24 ounces and can be used with detergents. It is available with a straight or 45-degree union. Opening is 1½ x 0.04 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 803.

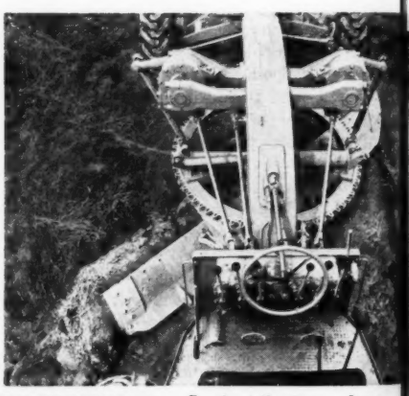
ALLIS-CHALMERS INVITES YOU TO . . .

Look at Your Grader Jobs

THROUGH THE EYES OF AN **AD-40** OPERATOR . . .



SLOPING— Look how much better you see . . . how much steadier your blade is with small control rods leading out to lift cases located directly over the circle.



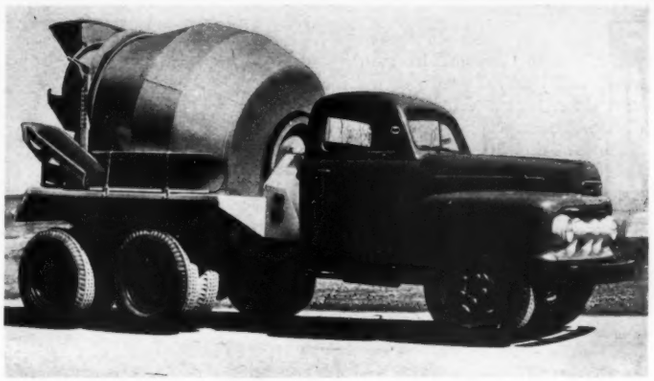
SOD STRIPPING — Look at the tapered corners on this clean, wide platform . . . how they give unequalled view of heel of ROLL-AWAY moldboard.

In addition to letting you see better, the AD-40 offers feather-touch hydraulic power steering, hydraulic brakes . . . and true comfort for any size operator, sitting or standing. Look!

Concrete Truck Mixer

■ A 4½ to 5½-cubic-yard concrete truck mixer has been announced by Willard Concrete Machinery Sales Co., 11700 Wright Road, Lynwood, Calif. A new feature is the drum drive run by a reversible hydraulic motor that is operated by power takeoff from the truck transmission. The drum drive turns the drum by chain and sprocket at 8 to 12 rpm for charging or discharging, and 3 to 5 rpm for mixing in transit. Control is by a valve that changes the direction of the fluid in the hydraulic motor. A check valve prevents drum roll-back while shifting gears. Mixing and discharge are controlled from the left front or the left rear by throttle and hydraulic valve.

The manufacturer points out that this drive arrangement saves weight by eliminating a heavy auxiliary gasoline engine. As a result, the mixer may be installed on shorter-wheelbase trucks for increased maneuverability. The Willard Hydro-Mixer is suitable for mounting on most ten-wheel trucks having 147-inch average wheelbase.



The new 4½ to 5½-cubic-yard Willard truck mixer.

The drum is stiffened by two continuously welded overlapping mixing spirals. Both charging and discharging hoppers have large collecting areas. The folding chute is made of ⅛-inch steel and extends 4 feet from the swivel center. Two chute extensions, 2½ feet and 5 feet long, are mounted on the fender. Sixty-seven gallons of water and 24 gallons of oil are carried in a rear-mounted tank with outlets for tempering and washing.

For further information write to the company, or use the Request Card at page 18. Circle No. 703.

Line of Portable Heaters

■ Literature on a line of portable heaters, dryers, and torches is available from the International Mfg. Co., 2249 S. Delaware, Denver 10, Colo. Largest item in the Chinook Wind line of heaters is the deluxe model which delivers 325,000 Btu at 2,280 cfm with one duct and 375,000 Btu at 2,680 cfm with two ducts. The ducts, which make it possible to concentrate the heat at the point of use, come in 12-foot lengths and have a diameter of 12 inches. They are made of 14-ounce canvas and are partly asbestos-lined for safety. Maximum duct length is 24 feet.

A utility model air heater which cannot be used with ducts has a discharge rating of 500,000 Btu at 3,500 cfm.

The company also makes a small model that weighs 35 pounds and delivers 100,000 Btu at 600 cfm. This unit is 18 inches wide, 23 inches high, and 11 inches deep.

The heaters are fired by LP gas and are said to be fume and smoke free.

The company also makes a heating torch that operates from any standard propane or butane bottle. It has a capacity ranging from 750,000 Btu down to 50,000 Btu.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 782.

Atlas Powder Changes

Ralph K. Gottshall was elected president of Atlas Powder Co., Wilmington, Del., as well as chairman of the executive committee. Mr. Gottshall joined Atlas Powder as a chemist in 1927, worked in the company's explosives plants, and was appointed manager of the Seattle, Wash., district in 1939.

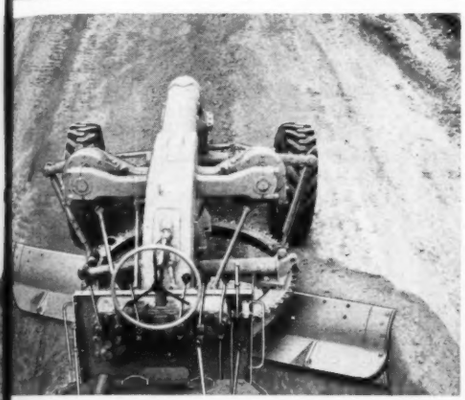
Isaac Fogg, the retiring president, becomes chairman of the board, in turn replacing Leland Lyon, who will remain a member of the board.

The company also announced the retirement of W. G. Frome, vice president and member of the board and executive committee. D. J. Copps, who recently succeeded Mr. Frome as general manager of the Explosives Department, was elected to the board and to the executive committee.

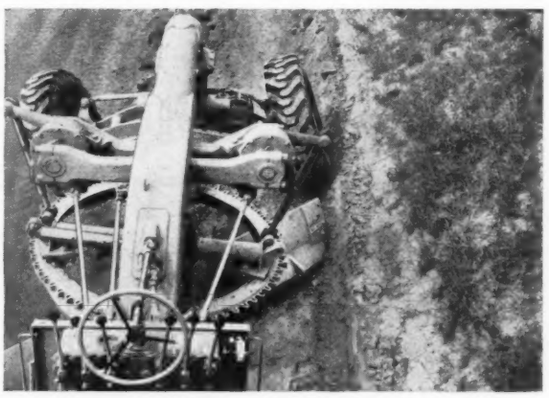
Tips on Rubber-Hose Care

■ A bulletin on the care of rubber hose is available from Hewitt-Robins, Inc., 240 Kensington Ave., Buffalo, N. Y. Called "Tips on Hose Care", the bulletin tells what to do and what not to do in the use and storage of various kinds of hose—steam, oil, gasoline, air suction, etc.

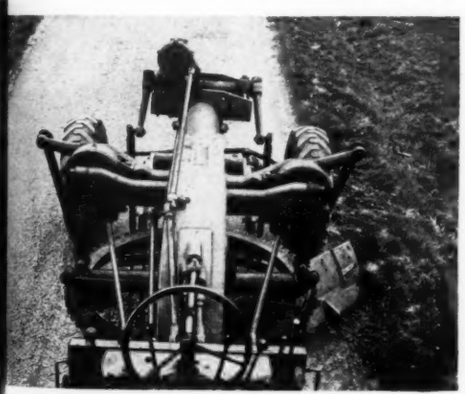
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 840.



GRADING — Look at that single member frame — it really lets you see what you're doing . . . means efficient grading on *any* job.



DITCHING — Look at the low control panel. It gives you a clear view of the blade . . . helps insure a clean, smooth ditch.



SCARIFYING — Look at the AD-40, even in scarifying, and you will see it means new, better grader visibility at all times.

• 104 bhp. • Six speeds forward, three reverse
• 23,000 lb. (with optional calcium chloride solution in rear tires — 24,800 lb.).

YES, the big, new AD-40 is designed for today's jobs and today's operators . . . brings new standards of performance to all users of motor graders . . . handles all grading jobs faster, better, easier. You owe it to your operators . . . and yourself to ask your nearby Allis-Chalmers dealer now for a demonstration and *see for yourself.*

ROLL-AWAY is an Allis-Chalmers trademark.

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE 1, U. S. A.

Line of Concrete Forms

■ Ready-made concrete forms are the subject of a new booklet from Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago 51, Ill. The new catalog illustrates and describes all phases and applications of the Uni-Form system, a number of forms of different sizes and shapes.

The panels are used in forming the concrete for straight, irregular, curved, and battered walls, as well as for slabs, beams, columns, piers, and foundations.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 841.

CUT TIME and LABOR COSTS
in preparation for Seeding . . .
with PIXTONE *The New Mechanical Stonepicker*

Pixtone picks up, carries, dumps stones 1" to 8" in diameter—a big help to anyone doing landscape work. Saves bulk of raking time in preparing for seeding along new highways, around schools and other buildings, parks, airports, etc. (Photo shows where PIXTONE made one pass through a stony field.)

Write today for free literature.

BRIDGEPORT IMPLEMENT WORKS, INC.
DEPT. E, STRATFORD, CONN.

A new Motorola 30-watt mobile radio.

Mobile Two-Way Radios

■ New 30 and 60-watt models have been added to the line of 25-to-54 mc F.M. two-way radio equipment made by Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Ill. The models feature innovations such as universal 6 to 12-volt dc operation, dual interrupter vibrator power supply, and drastically reduced primary power drain.

When operating from a 6-volt battery, the new 60-watt model requires 10.5 amps on standby and only 43 amps during transmit periods, which is the equivalent power requirement of conventional 30-watt equipment. Power drain of the new 30-watt unit is approximately equal to that of a conventional 10-watt transmitter - receiver combination, the manufacturer reports.

The new radio sets may be used interchangeably in 6 and 12-volt vehicles without revising internal wiring. All power conversion is accomplished automatically in the external cabling and connectors.

The seven-tube transmitter chassis employs a Type 6146 final amplifier tube. The 30-watt models have a housing measuring 6 inches high x 9⅞ inches wide x 18¼ inches long. The over-all measurement of the 60-watt units is 6⅛ inches x 15⅜ inches x 20¼ inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 813.

an ACCO product

LAY-SET Preformed WIRE ROPE

SPECIFY... HAZARD
...the GREEN
Strand Brand
Here's something your best friend will tell you—
that he gets better service from
HAZARD "Green Strand" Wire Rope

There's a Mighty Good Reason!

● Sure, HAZARD is made to standard specifications but there is one thing that tells you the moment you look at it that it's the best wire rope made—and that's the GREEN STRAND.

It will cost you more in the long run if you just order wire rope—where you can get it the cheapest. Just like anything else, the experience and integrity of the manufacturer are the real reason why you get longer service and better value from HAZARD Green Strand.

HAZARD Green Strand is made from the best materials, with precision, by oldtimers in the wire rope business. Then only certain constructions, carefully checked in use, are recommended for specific jobs you do. It's this combination of quality wire rope and correct recommendations that saves you money on all your wire rope purchases.

● Don't just ask for wire rope—specify, *and get*, HAZARD Green Strand Preformed Wire Rope. See your local HAZARD distributor or write our Wilkes-Barre office today for recommendations covering the equipment you operate.

ACCO
HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE
TRADE MARK
Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex.
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

makers of ACCO Registered WIRE ROPE SLINGS

Rotary Sweeper Cores

■ Cores for many popular makes of rotary sweepers are illustrated in new literature from the Van Brush Mfg. Co., 327 Southwest Blvd., Kansas City 8, Mo. The cores may be filled with India palm fibre, imported bass fibre, or spring steel wires.

Cores are available for the Grace, Hough, Littleford, Detroit-Harvester, Fordson, and other sweepers. The company will also build special cores to the customer's specifications. The manufacturer states that all popular standard-make cores are kept in stock at the company plant and there is no delay in filling orders.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 731.

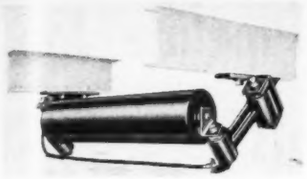
Wheel-Type Tractor

■ New literature is available on the DW20 wheel-type tractor. The tractor, powered by a 225-hp Caterpillar diesel engine, is shown in action with companion equipment. On the job illustrations show the tractor with the W20 wagon and the No. 20 scraper.

To obtain this literature write to Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 742.

Ressler Leaves Ryerson

Harold B. Ressler has retired from his position as chairman of the executive of Joseph T. Ryerson & Son, Inc., Chicago, Ill., nationally operated steel warehousing organization. He will remain a director.



The new Rex idler reduces the danger of damage from return-belt roving.

Conveyor Idler Drive Guides Return Belt

■ A new conveyor-belt idler keeps the return belt aligned without using side guide idlers. The Rex style No. 41 roller-bearing belt training return idler consists of a dead-shaft roller-bearing return roll mounted at each end to a toggle-like arrangement of swivel arms. These arms are suspended from the conveyor framework at an angle of approximately 45 degrees in the direction of belt travel.

Lateral movement of the belt to one side results in increased weight on that side causing that end of the roll to move forward and downward. At the same time, the opposite end of the roll is moved backward and upward, and this changing of the normal position of the roll with the belt guides the belt back to the central position. The idler acts to maintain an equilibrium, with the belt in the center of the roll and the roll in normal position. The action is said to be equally effective on horizontal, inclined, or declined conveyors, and the effect of build-up material on the roll is negligible.

Style No. 41 idler is furnished with standard 5 or 6-inch-diameter steel return rolls. Style No. 41RC idler has a standard 5½-inch diameter rubber-covered spiral return roll.

For further information write to the Chain Belt Co., Department P.R., 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 695.

Rubber Scraper Blades For Mortar Mixers

■ Rubber scraper blades are available as optional equipment on the mechanical plaster and mortar mixers made by Muller Machinery Co., Inc., P. O. Box 248, Metuchen, N. J.

The rubber blades will by-pass small pebbles that often get caught between steel blades and the inside wall of the drum, with resultant damage to blade and transmission. In addition to protecting against damage, the rubber blades keep the inside surface of the drum polished for easier cleaning.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 810.

Miller Is AEC Manager

William D. Miller has been appointed deputy manager of the Paducah Area, Paducah, Ky., for the Atomic Energy Commission. He has been chief of the operations division since 1951. Mr. Miller served at Oak Ridge, Tenn., with the Corps of Engineers, U. S. Army, Manhattan District, from 1944 to 1946. Later, he was assistant chief of the production division at Oak Ridge.

Concrete Sawing Machines

■ A line of concrete cutting saws is shown in literature from Concrete Sawing Equipment, Inc., 331 N. Santa Anita Ave., Arcadia, Calif. The line includes single-blade lightweight, standard, and self-propelled models, and a multiple-blade joint sawing machine. The lightweight Concut concrete saw is powered by an 8-hp air-cooled gasoline engine and cuts concrete or asphalt at depths up to 2⅞ inches. It is recommended by the manufacturer for jobs where there will be interrupted cuts such as those handled by utilities, municipalities, and electrical and sewage contractors. A larger model has positive depth control and is equipped with a lever-lock. It cuts up to 4¼ inches deep.

The self-propelled model, powered by a 13.3-hp air-cooled gasoline engine, has a variable Vickers hydraulic transmission unit.

The multiple-blade sawing machine, the Jointmaster, is a 12-foot machine that can be made into a 25-foot unit. It uses two to four blades, and each blade cuts six feet.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 736.

Line of Air Compressors

■ A new eight-page bulletin describes air compressors made by the Davey Compressor Co., N. Water St., Kent, Ohio. The bulletin contains specifications on units ranging from 10 to 100 hp with displacements of 55 to 540 cfm.

A table shows the number of industrial tools of various types which can be operated by each size compressor.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 780.

The Convention Calendar is on Page 105.

There's a **BROWNING CRANE** *Designed for Your job!*

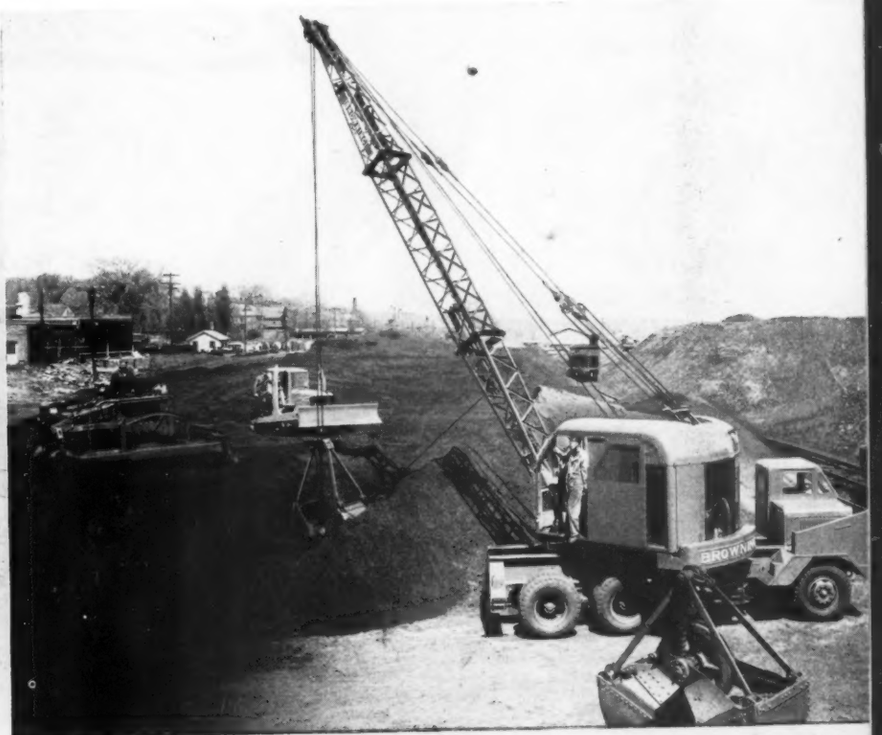
BROWNINGS are Star Performers on these jobs

CAR LOADING

MAINTENANCE-OF-WAY WORK

STEEL ERECTING

SCRAP HANDLING & SWITCHING



High-speed maneuverability and fast, easy operation give this Browning 17½-Ton, Rubber-mounted Truck Crane a high production record on highway jobs. With a simple boom change it is equally versatile on back-hoe or shovel operations.

TEN basic models for heavy-materials handling with almost unlimited combinations of capacities, booms and equipment enable Browning to deliver a crane exactly suited to your needs. This wide selection assures you the right type of crane with ample power and capacity for your job. It also eliminates the necessity of over-investment in a crane larger than you need.

Brownings are the star performers of the power-crane industry . . . that's why crane men everywhere will tell you *"You can't go wrong with a Browning on the job."*

Write for complete specifications on the Browning model designed for your job.

THE BROWNING CRANE & SHOVEL CO.
Dept. D • 16226 Waterloo Road • Cleveland 10, Ohio

WAGON CRANES 2 Models 17½ to 25 Tons 25 to 100 Ft. Booms

TRUCK CRANES 5 Models 8 to 30 Tons 25 to 120 Ft. Booms

LOCOMOTIVE CRANES 3 Models 25 to 50 Tons 50 to 135 Ft. Booms

BROWNING LOCOMOTIVE, WAGON TRUCK AND CRAWLER *Cranes*

Tough Pipeline Job Meets Schedule

Robert Bangar, general superintendent for the Vido Artukovitch Co., stands beside the Trenchliner as it digs a trench for the deep sewer line. *Ray Day Photo*

WORKING WITH ONLY a five-man labor crew, the Los Angeles construction firm of Vido Artukovitch Co. has finished a large-diameter clay sewer job successfully on a scheduled production of 300 feet per eight-hour shift. The Artukovitch firm bid the little 4,600-foot job successfully although it specializes in long, large-diameter heavy pipeline construction, and many of its projects have recently run into multi-million dollar figures.

The job in question is a combination 24 and 21-inch-diameter clay pipe outfall, leading from a new Veterans Administration psychiatric hospital in San Fernando Valley down Lassen Boulevard to one of the main outfall lines in the San Fernando Valley sewage network. It was designed and built under supervision of the City of Los Angeles, whose Engineering Department directs all such work within the City's corporate limits. Started March 20, 1953, the job was pushed through by April 30.

The things which made the pipeline job a tricky one included trench depths from 17 to 19 feet and 4 feet in width, spotty sand pockets which cropped up often enough to cause trench bracing even closer than State safety codes require, and the presence of a 2-inch gas line running within 2 feet of the pipeline ditch for the entire length of the project.

Other factors which complicated construction included a tunnel undercrossing of Sepulveda Boulevard and pavement which had to be broken in several places before the pipeline could be laid. In many places, the new line ran close to homes, trees, and landscaping, further complicating the work. Despite these conditions, however, the job was set up around a production of 300 feet a day, and General Superintendent Robert Bangar was able to hold his small labor crew to that schedule.

Construction Procedure

Bangar started his job at the low-elevation end and worked toward the hospital. An arrangement was

COMPARE...

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all 3 ways!

- for low cost
- for work capacity
- for all-around performance

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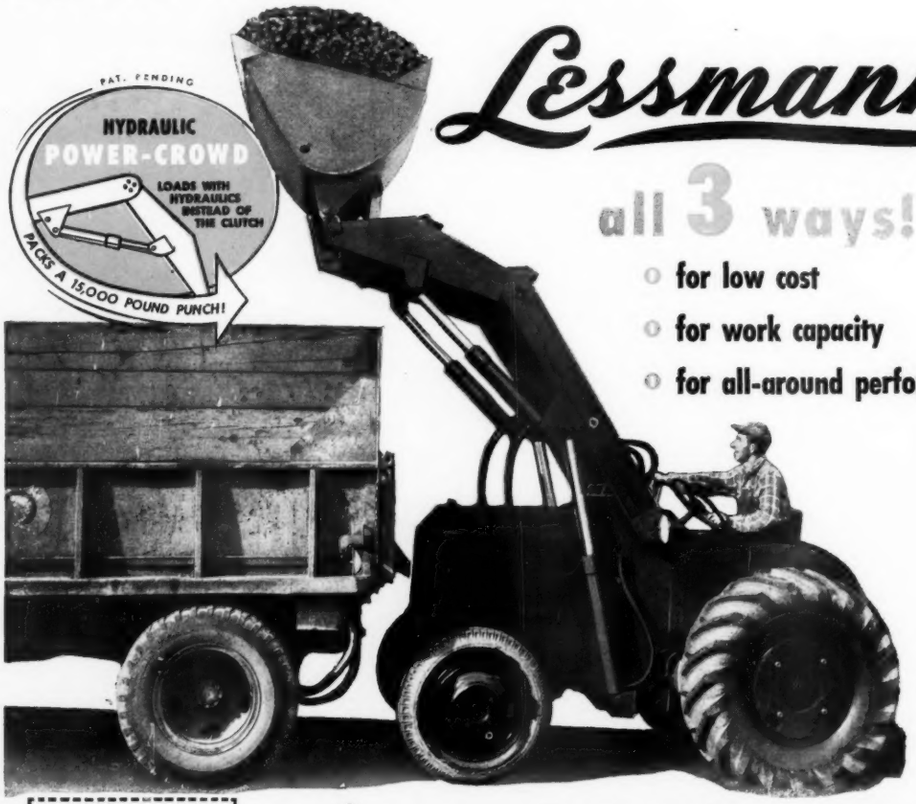
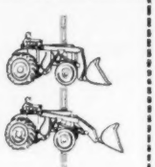
HYDRAULIC POWER-CROWD
LOADS WITH HYDRAULICS INSTEAD OF THE CLUTCH
PACKS A 15,000 POUND PUNCH!



A Lessmann DIGS DEEP, CARRIES CLOSE, LIFTS HIGH!

A Lessmann digs 12" below wheel level, has 11" clearance, 8'6" dumping clearance. Three levers control all bucket movement. A single lever controls bucket or 'dozer blade's forward thrust of 7½ tons . . . *while unit is standing still!* Blades, choice of shovel buckets, crane hook and lift forks adapt a Lessmann to hundreds of digging, 'dozing, loading and material handling applications. Bucket capacities from ⅝ yd. to 1¼ yds.
Lessmann Loaders are built *from the ground up* by the 34-year-old Lessmann Mfg. Co. Components such as engine, driving axle, hydraulic system, are nationally known name products . . . Ford, Timken, Vickers, Bendix, *parts with a pedigree* to minimize down-time and maintenance costs at those infrequent intervals when even a Lessmann may need minor servicing. Optional equipment includes power steering and power brakes. GET ALL THE FACTS TODAY!



EXCLUSIVE FEATURE
. . . A Lessmann takes a "ton bite" of sand, coal or aggregate . . . even though frozen . . . *while unit is standing still!*

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HYDRAULIC POWER-CROWD
LOADS WITH HYDRAULICS INSTEAD OF THE CLUTCH
PACKS A 15,000 POUND PUNCH!

Write Today for FREE FOLDER giving 'Specs' and Complete Information!

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Reduce costs and
INCREASE PROFITS
by renting these metal forms for concrete

Economy Metal Forms save time, labor and material. They quickly lock together with a simple twist of a clamp. Standard units fit most jobs. Where needed, special forms can be fabricated to specification.

ECONOMY FORMS CORP.
Home Office: Des Moines, Iowa
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ECONOMY FORMS
metal forms for concrete construction

Five-man labor crew, working in cramped area, pushes clay sewer line 300 feet per 8-hour shift

made with Emsco Concrete Cutting Corp. of Los Angeles for the removal of pavement in streets affected by the pipeline. Emsco used a heavy-duty RPB pavement breaker for this operation and broke the 4-foot ditch location about 1,000 feet ahead of the job. In other locations where street surfacing was a low bituminous-type, the pavement was either dug up by the trench digger or, in some cases, was broken by a small jackhammer.

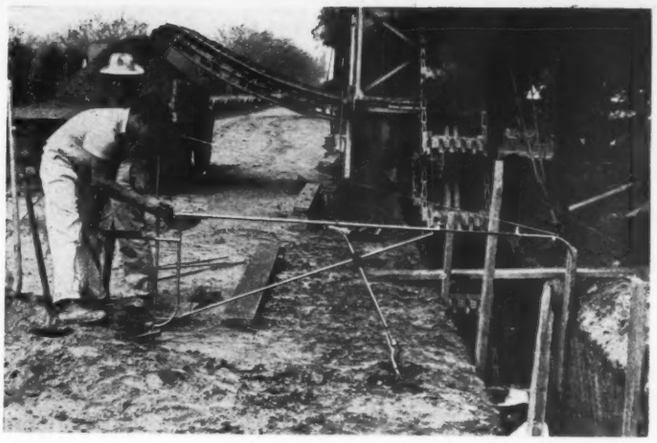
At the time the pavement breaking was under way, the 21 and 24-inch-diameter clay pipe, furnished by Gladding, McBean & Co. of Los Angeles, was hauled in and unloaded at proper intervals along one side of the street. Street sections under construction were barricaded so that they would be closed off to all through traffic. The streets were open, however, to people living within blocks affected by the pipeline construction.

Artukovitch purchased a new Model 310 Parsons Trenchliner for the San Fernando Valley job through the Los Angeles equipment distributor firm of Harron, Rickard & McCone. The Trenchliner had several features which lent themselves to job efficiency. Like most modern trench digging equipment of the continuous-bucket type, the machine was equipped to retract or extend its discharge conveyor, so that it could discharge dirt on either side of the ditch. This made it especially convenient to use near trees and other obstructions because the operator simply stuck his conveyor out to the street in such cases and dumped dirt directly into dump trucks, which took it away.

Wherever possible, dirt loaded in this manner was hauled directly to some point where it could be used as backfill, so that secondary storage could be held to a minimum.

The Trenchliner was equipped with H&L digging teeth throughout, and the boom was capable of handling the full 19-foot depth required in many places. Soil formations varied from clay through sand, and in some cases a few gravel pockets

(Concluded on next page)



Line and grade trueness are quickly established by this Gradeliner as it works behind the trenching machine.

Ray Day Photo

SERVICISED PRODUCTS for TILT-UP and PRE-CAST CONSTRUCTION

Cementone

SPONGE RUBBER JOINT FILLER

- *Matches color of concrete*
- *Fully resilient—non-extruding*
- *Made in any degree of compressibility*
- *Supplied in any thickness, length*

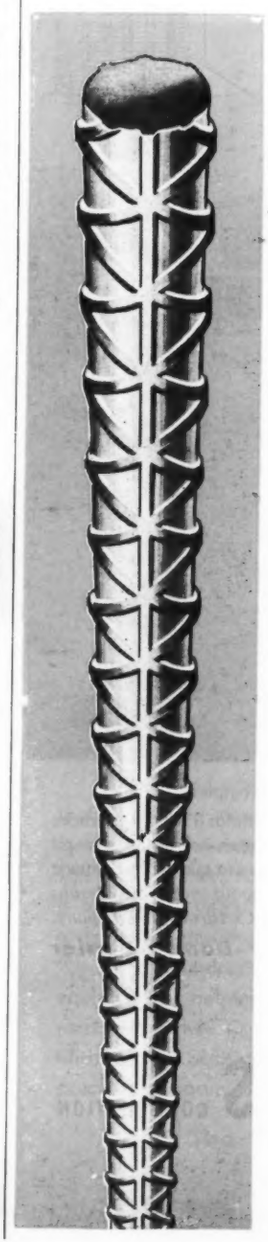
Seal tilt-up joints with resilient, non-extruding Servicised Sponge Rubber Joint Filler. May be cemented to concrete panel before being placed to speed erection and control compression of the joint. Servicised Calk-Crete caulking compound recommended to seal recessed joints when they are specified.

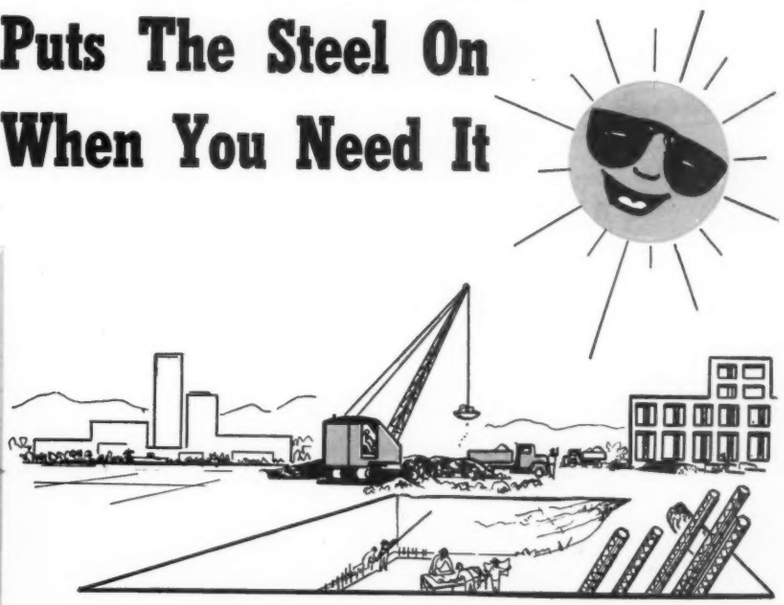
Also—a complete line of curing and separation compounds—a type for every purpose.

Write for descriptive Catalog on Servicised Products. No obligation.

SERVICISED PRODUCTS CORP.
6051 W. 65th ST. • CHICAGO, ILL.

Connors Puts The Steel On The Job When You Need It





Try Connors service on your next construction project. You will find that your job progress, insofar as work requiring reinforcing steel is concerned, follows much closer to schedule.

Dependable service is a tradition at Connors and is available to you because of these factors:

1. **Compactness and flexibility of Connors rolling mills;**
2. **Fabricating shop within a few feet of rolling mills;**
3. **Connors access to transportation facilities, both truck and rail;**
4. **Teamwork between Connors sales and production people.**

We invite your inquiry . . .

CONNORS PRODUCTS

- **Concrete Reinforcing Bars**
- **Hot Rolled Strip**
- **Merchant Bars**
- **Special Sections**

CONNORS STEEL DIVISION
H. K. PORTER COMPANY, INC.
OF PITTSBURGH
P. O. BOX 2562 • BIRMINGHAM, ALA.

Tough Pipeline Job Meets Schedule

(Continued from preceding page)

were found. San Fernando Valley at the pipeline location consists basically of a deep alluvial formation.

As the Parsons Trenchliner moved along, two of the five-man labor crew set 2 x 8-inch lagging, and tightened three trench jacks placed between the top and bottom of the ditch. This bracing was set at 5-foot centers, although safety codes for such construction calls for 8-foot centers. The closer centering was believed to be necessary by Superintendent Bangar because so many sand pockets were being found.

All intersecting utilities such as water lines, gas lines, and electric lines were marked out in advance of the trench digging operation so that accidental breaks were held to an absolute minimum. One man in the labor crew worked along in the bottom of the ditch with the trenching machine, establishing a finegrade very close to project tolerances with an ordinary shovel. At regular intervals, the trench depth and location was also checked by a Gradeliner instrument, which referred its reading to survey hubs set at 50-foot intervals.

Hampered by trees along one side of the ditch, a Parsons Trenchliner loads excavated material on a truck. *Ray Day Photo*

Pipe joints were picked up and the sections installed by a Link-Belt Speeder HC-70 truck crane, which used a small cable for setting each piece as it moved down the line. The pipe sections were placed on a 4-inch cushion of granular pea gravel, dumped into the ditch from stockpiles made at regular intervals by a Hough Payloader. Consolidated Rock Products Corp. furnished this material with a fleet of its regular transport delivery trucks. The finegrade required some hand-labor attention, of course. As each pipe section was laid, the finegrade was made just ahead of the operation. Joints were filled with a mortar consisting of cement, sand, and water, making them watertight.

Backfill in confined locations was dumped directly from trucks, and in other places where the Trenchliner had been able to stockpile material, it was pulled in by a Mormon-board hooked to the drag cable of the Link-Belt Speeder truck crane. The backfill was brought up to within a few feet of the top of the ditch, and the earth was then flooded with water by hose and pipe, leading from fire hydrants along the right of way. The upper two or three feet of material was tamped pneumatically before the pavement in street sections was replaced.

Sepulveda Tunnel Dug

Before the Sepulveda Boulevard crossing had been tackled, Superintendent Bangar was concerned because earth formation under the boulevard consisted of tricky sand. He handled the crossing with a 60-inch-diameter tunnel, however, and managed to trench out the material with picks, shovels, and wheelbarrows, without using a shield. After the sewer line had been laid under the busy street, the voids surrounding it were bulkheaded and filled with a cement-grout injection.

In spite of the inherent difficulties which might have slowed down a pipeline installation less carefully supervised, Bangar held work ahead of schedule.

CF&I Names Byrnes

E. J. Byrnes, Jr., has been appointed assistant general manager of sales of the Eastern Division of The Colorado Fuel & Iron Corp., New York, N. Y. His new office is at the executive offices of the company, 575 Madison Ave., New York 22, N. Y.

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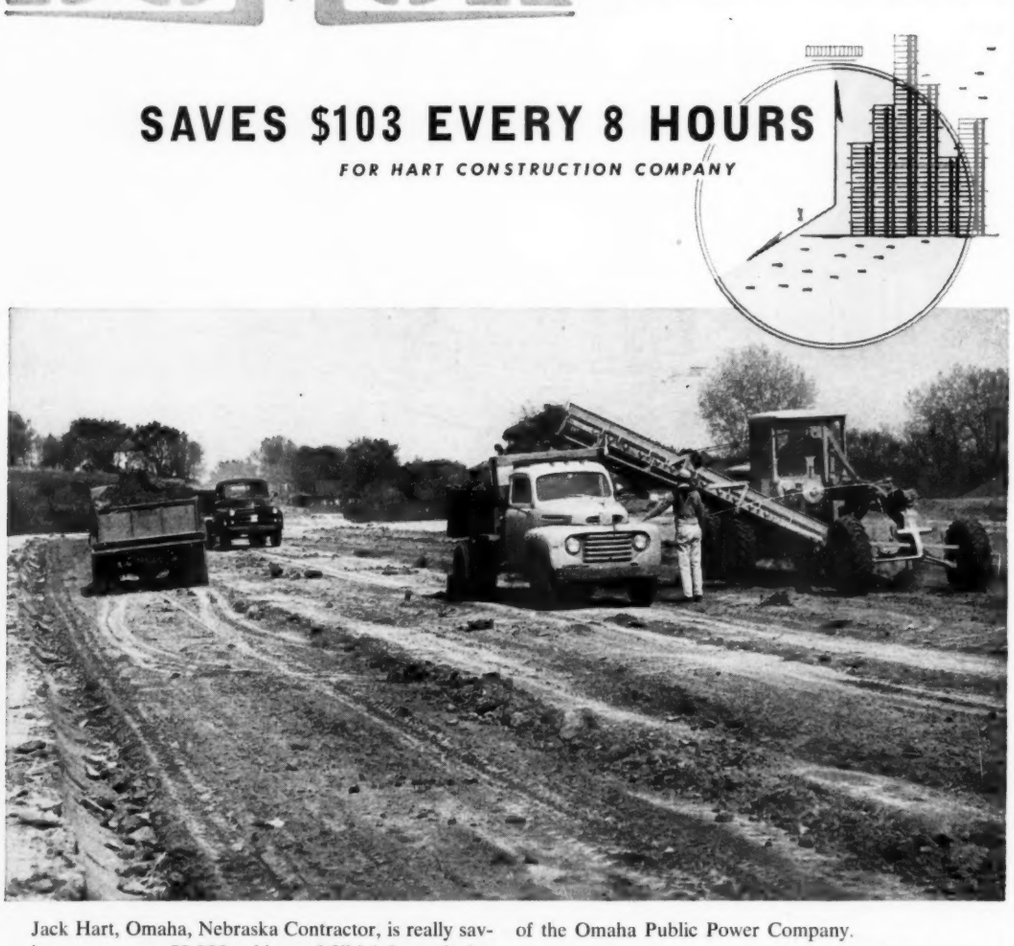
SAVES $103 EVERY 8 HOURS

FOR HART CONSTRUCTION COMPANY



Jack Hart, Omaha, Nebraska Contractor, is really saving money on a 50,000 cubic yard fill job by replacing single-purpose loading equipment with his one-man operated Domor Elevating Grader.

The Domor, working in a borrow pit one mile away, loads into trucks which deliver 2400 cubic yards in 8 hours to the new Missouri River power plant site of the Omaha Public Power Company.

The Caterpillar No. 12 and Domor Elevating Grader attachment loads in second gear—leaves borrow pit smooth and level—permits trucks to take full advantage of their speed, assuring fast, smooth cycle time. *Result: Lower cost per yard for Hart Construction Company.*

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MHI to Hold Boston Clinic On Material Handling

The second in a series of traveling clinics on material handling for 1953 will be held October 2 in the Sheraton-Plaza Hotel in Boston by the Material Handling Institute and the New England Chapter, American Material Handling Society.

Five panel discussions, dealing with a number of problems, have been scheduled for the meeting. Among the topics to be covered are industrial gasoline and electric trucks, conveyors, powered hand trucks, overhead and monorail cranes and hoists, pallets, steel wire, and strapping.

The clinic, like others being planned for major industrial centers, is to develop a better understanding of the correct application of material-handling equipment to problems in industry.

Data on Intake Filters

■ Intake filters for internal combustion engines, compressors, blowers, motors, and generators are shown in literature from the Dollinger Corp., 11 Center Park, Rochester 3, N. Y. All Staynew intake filters are of the dry type. The manufacturer points out that there are no oil reservoirs to clean and refill and no oil coatings to be renewed.

A special felted material is used as a filtering medium in the company's product, and the manufacturer reports that the efficiency of these filters actually increases as the dry filtering medium becomes coated with dirt. At the same time the resistance builds up slowly with this dust loading. The company's radial-fin insert is intended to provide maximum filtering area in the smallest available space.

Specifications are given for standard, silencer, and ground level installation models in medium and large capacities. The literature also shows a small capacity intake filter and a breather filter for application on crank and gear cases, storage tanks, hydraulic systems, and accumulators.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 753.

Hercules Powder Elects

William A. Buce has been appointed assistant works manager of Hercules Powder Co.'s Bacchus, Utah, plant, succeeding Joseph B. Talley. Mr. Buce started with Hercules as a chemist in 1940 and later served in supervisory capacities.

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4002 First Ave. N., Birmingham 1. Ray-Brooks Machinery Co., 2275 W. Fairview Ave., Montgomery; P. O. Box 387, Mobile.

ALASKA—Philpott Equipment Co., 573 Dexter Horton Bldg., Seattle 4, Washington.

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Standard Equipment Co., 152 Horton St., Wilkes-Barre; Hepburn & Lycoming Sts., Williamsport.
L. B. Smith, Inc., Camp Hill (Harrisburg); 29th & Montgomery Avenue, Philadelphia.

RHODE ISLAND—Clark-Wilcox Co., 2323 Pawtucket St., E. Providence.

SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.

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TENNESSEE—Euclid-Memphis Sales, Inc., 185 E. Butler Ave., Memphis 2.
Power Equipment Co., 1818 Island Home Ave., Knoxville; 600 W. Manning St., Chattanooga; 181 Clay St., Kingsport.

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Lively Equipment Co., P. O. Box 1438, El Paso.

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51 "Eucs" WORKING AT FOLSOM DAM

Fifteen and a half million cu. yds. of earth and rock are being moved for construction of Folsom Dam on the American River near Sacramento, Cal. This big irrigation, flood control and power project is being built under the supervision of the Corps of Engineers and the U. S. Bureau of Reclamation.

As on hundreds of other tough jobs, Euclid equipment is helping to keep the earth moving work on schedule. Contractors for the dam, Merritt-Chapman & Scott Corporation and Savin Construction Company are using 4 Euclid Twin-Power Scrapers, 15 Rear-Dump "Eucs" of 22 ton capacity, 16 Bottom-Dumps carrying heaped loads of 30 cu. yds., and a Euclid Loader. Guy F. Atkinson Company is using a total of 15 "Eucs" for power house excavation and building an access road.

The high production and cost cutting features of Euclid equipment can pay off for you just as they are for the contractors at Folsom Dam. Ask your Euclid Distributor for facts and figures . . . he has a new catalog on the complete line of Euclid equipment for you . . . just ask for Form 325.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

Euclid Equipment

A Ford truck dumps a load of plant-mix into the Barber-Greene finisher that is laying the top course on the rebuilt portion of Georgia's Uncle Remus Highway. The center-line joint is sealed by a Buffalo-Springfield 5 to 7-ton tandem roller. *C. & E. Photo*

Highway Is Rebuilt With Plant-Mix Top

Laid on soil-bound macadam base for 10.8-mile contract; new pavement is 24 feet as compared to 18-foot old road

..CONSTRUCTION OF A POWER DAM on the Oconee River in Baldwin County, Ga., had an effect on State Route 24, the well-known Uncle Remus Highway lying to the west of it. In making way for the future Sinclair reservoir formed by the dam, the State Highway Department of Georgia reconstructed a 10.8-mile section of this road, raising the grade and rebuilding the drainage structures. The project begins in Baldwin County, 6½ miles above Milledgeville, and runs north to Eatonton in Putnam County, where it joins a 20-foot concrete pavement. Adjoining the new work on the south is a 22-foot soil-bound macadam base, surfaced with a Topeka mix. The road also carries U. S. 441.

Built over 20 years ago, the existing road had a clay-gravel base, 18 feet wide, topped with a bituminous single surface treatment. Its alignment was good, and was generally followed in the new road, except for the elimination of some of the curves and grades. The improvement has a 24-foot pavement, consisting of an 8-inch compacted soil-bound macadam base course, topped with 1½-inch binder and 1-inch surface courses of bituminous concrete.

Since the Georgia Power Co. owns the newly-built dam, it paid the

an ACCO product

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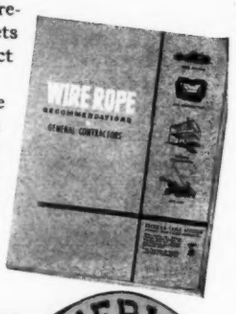
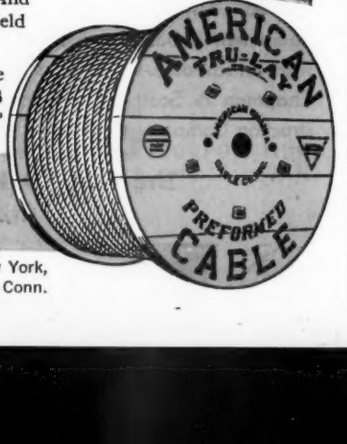
What Drag Rope Do YOU Use?

● There are three ropes (boom, hoist, and drag) on dragline machines, but let's just talk about the one which wears out the fastest—the drag rope. It is frequently down in the dirt; it is subject to a terrific amount of abrasion; it gets jerked and snapped—yet, if you use the correct construction, you can expect reasonably long service.

What Is The Best Construction? Bigger outside wires wear longer and if the rope is Lang lay, more length of each wire is exposed adding to abrasion resistance. (Preforming of TRU-LAY makes Lang lay easy to handle.) Now to withstand the shock loads, TRU-LAY Preformed is made with improved plow steel wires (identified by the GREEN strand) and an independent wire rope core. Here's really a tough rope for a tough job.

● You don't have to guess which rope is best for each job you have—not if you get a copy of AMERICAN CABLE'S "Wire Rope Recommendations for General Contractors." It tells you exactly what you need. And the recommendations are based on careful recordings of many field studies by TRU-LAY engineers.





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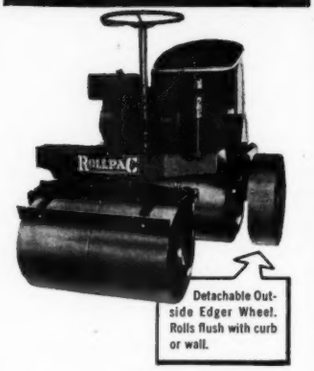

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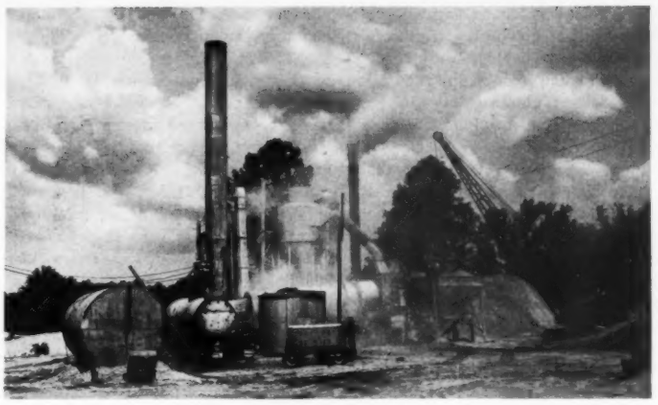


The Cedarapids asphalt plant is set up near the rock quarry where aggregate for the mix was obtained. A Lucey boiler, left, supplies the steam for all plant operations. *C. & E. Photo*

difference in cost between the proposed reconstruction, as the state originally planned the improvement, and actual reconstruction, which called for raised grades because of the reservoir. This was estimated at $290,718.85.

Bridges and Road

Leo T. Barber of Moultrie, Ga., was awarded the bridge contract for $214,460. It consisted of three principal structures: (1) a 383-foot span over Little River; (2) a 160-foot span across Beaver Dam creek; and (3) a triple 10 x 15-foot reinforced-concrete bridge culvert. Structures 1 and 2 have concrete piers and abutments, steel stringers in the superstructure, and concrete decks with 28-foot roadways.

The Wright Contracting Co. of Columbus, Ga., was awarded the road contract for $699,065. It involved over half a million yards of grading which was handled both by tractor-scraper units and rubber-tire hauling equipment. Even as the excavation was in progress, a crusher was set up in a quarry located about ¾-mile east of the center of the job. The Hitchcock Corp. of Murphy, N. C., had a subcontract to crush all the gneiss rock needed for the macadam base, riprap for the pond area, and for the plant mix.

As the grading was completed, the subgrade was given a treatment with class-A topsoil—a minimum of 6 inches over the entire job, and up to 18 inches thick in places. The material was obtained from local pits and fields. It had a clay content of from 9 to 18 per cent; a minimum of 45 per cent of the material was permitted to be retained on the No. 60 sieve. A fleet of trucks hauled the special subgrade treatment, and it was put down in loose 9-inch lifts over the full width of roadway. Then sheepsfoot rollers compacted it to 6-inch layers and 95 per cent density.

Macadam Base

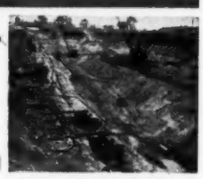
The 8-inch soil-bound macadam base was put down in two 4-inch layers, and each lift was compacted to 100 per cent density with steel wheel and rubber-tire rollers. It consisted of 60 per cent No. 467 stone, and 40 per cent soil or binder,

(*Continued on next page*)

WET JOBS

Whether it's

HEAVY CONSTRUCTION



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Machine with a reach!

THE MULTI-PURPOSE GRADALL

HERE's a particularly good example of a tough excavation made easy by the Gradall. On this job, hard-to-get-at clay had to be removed from beneath a roadbed to build a pedestrian underpass. Gradall's telescoping, *arm action* boom reached far in—often horizontally—digging close to piling, completing the job *fast* and with such precision that hand labor was practically eliminated.

You've undoubtedly encountered a number of such tough jobs you could have completed faster and better with a Gradall. And if you ask any Gradall owner, he'll tell you that he keeps his Gradall *busy*—handling a wide variety of jobs such as trenching, backfilling, ditch cleaning, grading, and pavement removal. And from one job, it's ready to speed to the next, carrying its own interchangeable attachments for the work to be done.

But see the Gradall in action—see how this multi-purpose machine can cut costs and build profits for you. Your nearest Gradall Distributor will be glad to arrange a field demonstration.

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Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

Highway Is Rebuilt With Plant-Mix Top

(Continued from preceding page)

the same material used in the subgrade treatment. The stone was spread first, the soil added, and the two materials were then mixed together with grader blades at an optimum moisture of about 11 per cent, keeping the mortar uniform throughout its depth. After the bottom 4 inches was laid, the surface was scarified lightly so that the top course would bond well.

Gradation of the No. 467 stone is as follows:

Sieve Size	Per Cent Passing
2-inch	100
1½-inch	95–100
¾-inch	35– 70
⅜-inch	10– 30
No. 4	0– 5

When completed, the base was primed with RT-2 tar applied full width at the rate of 0.25 gallon per square yard by an Etnyre 1,350-gallon distributor mounted on a White truck. The tar came from a Koppers plant at Birmingham, Ala., by tank car to a Central of Georgia railroad siding about midway on the job. The tar was applied at a temperature of 125 degrees F.

Asphalt Plant

In the meantime, Wright had set up a Cedarapids 1½-ton pugmill-type asphalt plant adjoining the rock quarry whence came the coarse stone and screenings for the mix. AC-8 asphalt for the bituminous concrete was obtained from the Mexican Petroleum Corp. yard at Port Wentworth, near Savannah, Ga. It was delivered to the plant in 5,000-gallon feeder tank trucks by the Davis Trucking Co. of Savannah. At loading, the bitumen was around 325 degrees F, and after the long haul the temperature dropped to between 250 and 275 degrees F.

At the plant a Kinney 3-inch asphalt pump unloaded the asphalt into two 12,000-gallon storage tanks. The same pump also delivered the bitumen to the weigh bucket; a return line with bypass valve ran back to the tanks. Steam-jacketed lines were 6-inch-diameter and enclosed a 3-inch-diameter pipe for the bitumen. A Lucey 30-hp boiler supplied steam for all plant operations. Bunker C fuel oil for the boiler and dryer was stored in a 12,000-gallon tank. Water for the boiler was pumped from a spring by a 2-inch pump and stored in a 5,000-gallon tank.

A Koehring crane with a 40-foot boom and a Blaw-Knox 1-yard clamshell bucket fed aggregate from the three stockpiles of coarse stone, medium stone, and screenings, into the 30-ton receiving hopper at the plant. From a bottom feeder on the hopper, the material moved up a 15-foot cold elevator to a single shell dryer—35 feet long x 6 feet in diameter. This unit was equipped with a single Hauck burner fired by Bunker C oil at 180 psi steam pressure.

Diesel-Electric Power

The heated aggregate then went up a 40-foot hot elevator to the screens where it was divided into three sizes and diverted to separate bins. Fines that had been drawn off from the dryer into the dust collector were returned to the bottom of the hot elevator. In mixing the 3,000-pound batches, the aggregate was turned over in the pugmill for 15 seconds before the asphalt was added. Total mixing time was one minute.

Power for plant operations was supplied by a Murphy 175-hp diesel engine that ran a General Electric 125-kw generator. This diesel-electric set ran the various G-E motors used in the plant: pugmill, 30 hp; dryer, 15 hp; cold elevator and feeder, 5 hp; hot elevator, 5 hp; screens, 5 hp; asphalt pump, 4 hp. When he set up the plant, the contractor did not have on hand an electric motor to drive the dust collector, so he rigged up a General Motors 3-cylinder diesel engine to power this one unit. With the exception of the asphalt pump, the motors were wired in series. Thus if anything happened to the motor on the screens, for instance, the others would cut out and prevent the aggregate from spilling over the plant.

The mix was discharged around 300 degrees F into a fleet of from 6 to 8 trucks holding 5 batches or 15,000 pounds of asphaltic concrete. Hauling was done under a separate contract and paid for on a ton-mile basis. Before the batch trucks left the plant area, they were weighed on a Winslow beam scale. Working a 12-hour day, the plant produced an average of 1,000 tons daily.

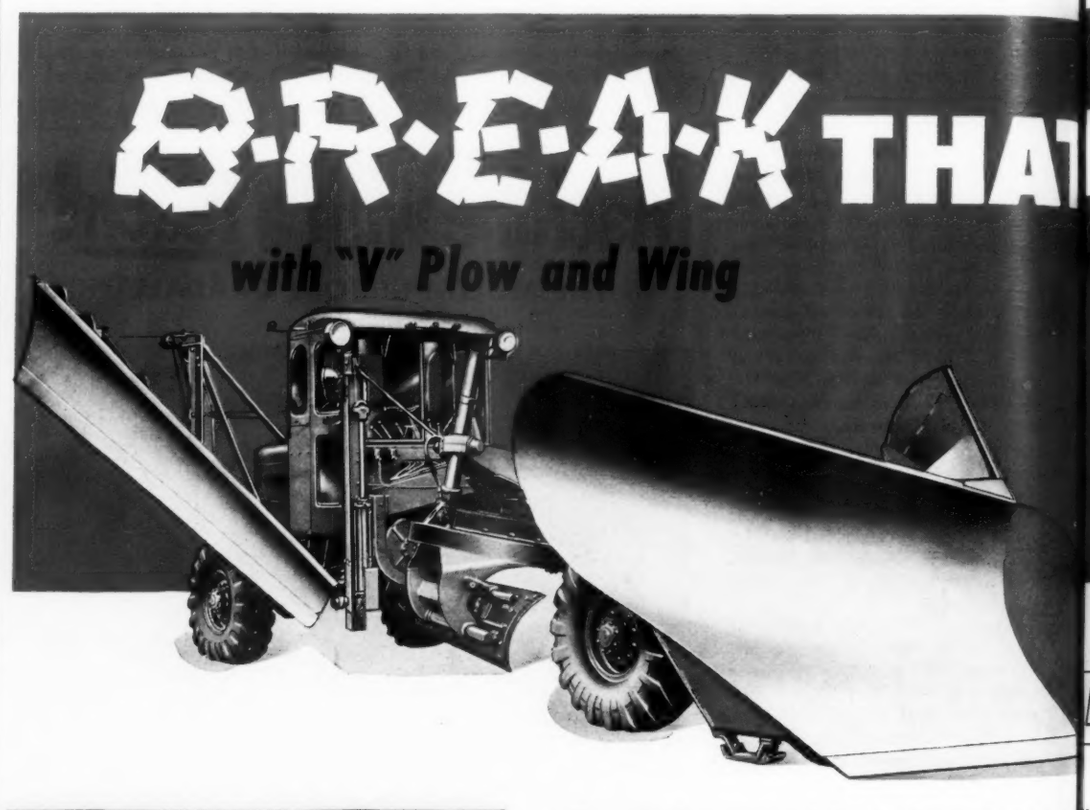
The Mix

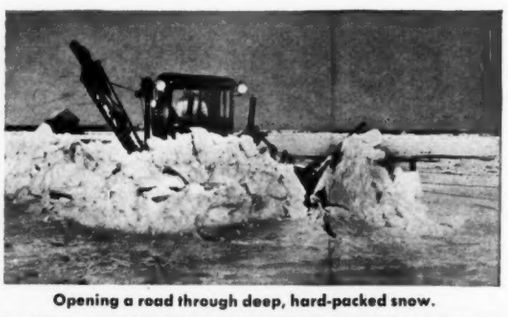
Typical batch weights of binder and top courses were:

Material	Binder Course	Top Course
Stone	1,852	966
Screenings	998	1,814
AC-8 asphalt	150	220
Totals	3,000	3,000

The binder contained 5 per cent by weight of asphalt, while the top course contained 7.3 per cent in these typical batches.

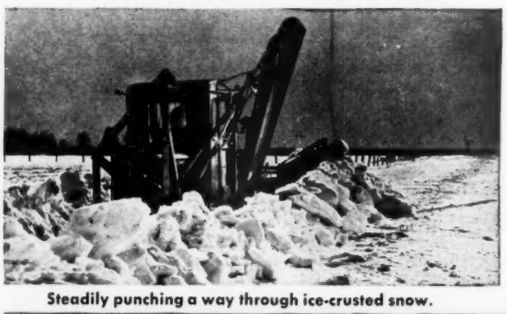
Gradation of the aggregate ac-





Opening a road through deep, hard-packed snow.

The tremendous power and directional control of Austin-Western's Four-Wheel Drive and Four-Wheel Steer Power Graders are supremely important in plowing snow. Only a grader with traction at both ends can resist the side thrust developed in handling heavy drifts. In breaking a road open and particularly in widening out, power on the front wheels keeps the plow steadily going through without slipping or sliding. Rear steer counteracts side draft and adds the maneuverability so essential where the "going is toughest." Whether the snow is deep or shallow, light or heavy—any Austin-Western Grader equipped with a Giant Plow and Wing does a real job of fighting it.



Steadily punching a way through ice-crusted snow.

Rear steer is a great help in widening out.

Austin-Western

Power Graders
Road Rollers · Motor Sweepers

BALDWIN BLH LIMA-HAMILTON

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Construction Equipment Division

cording to the job mix follows:

Sieve Size	Per Cent Passing	
	Binder Course	Top Course
1-inch	100	....
¾-inch	98	....
½-inch	....	100
⅜-inch	55	98
No. 8	30	55
No. 16	....	46
No. 50	16	28
No. 100	6	12
No. 200	3	7

The plant usually ran binder for two days, followed by a single day's run of top course material. A Barber-Greene finisher (with a second machine as a standby) laid the plant mix in 12-foot lanes, going up one side of the road in the morning and returning on the other side in the afternoon. The project was closed to traffic but adequate detours were provided.

Binder averaged 150 pounds per square yard for the 1½-inch layer. The 1-inch top course weighed around 100 pounds per square yard. Two Buffalo-Springfield tandem rollers—a 5 to 7-ton and a 7 to 10-ton—handled the compacting. The 24-foot pavement has a center crown of 2 inches in 12 feet. It is flanked by 8-foot shoulders of selected material, pitched 1 inch per foot. Side slopes vary from 4 to 1 to 2 to 1.

Quantities and Personnel

Major items in the 10.8-mile contract on State Route 24 include the following:

Clearing	172 acres
Unclassified excavation	509,983 cu. yds.
Aggregate, macadam base	41,903 tons
Binder, macadam base	21,151 cu. yds.
Bituminous prime	56,619 gals.
Plant mix, binder	11,791 tons
Plant mix, top	7,792 tons
AC-8 asphalt	328,706 gals.
Concrete, structures	1,408 cu. yds.
Reinforcing steel	228,500 lbs.

For the Wright Contracting Co., Bob Wright, Jr., was superintendent on the grading, with R. O. Griffith, superintendent on the base work, and H. O. Jenkins, superintendent on the bituminous paving.

For the State Highway Department of Georgia, G. F. Ellis was resident engineer on the project. The Department is headed by Jim L. Gillis, Sr., chairman of the board. M. L. Shadburn is state highway engineer, and C. S. Fain is construction engineer.

BLOCKADE !

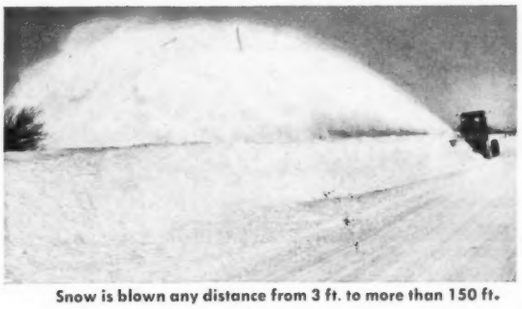
ith this Powerhouse Combination

Austin-Western
SICARD

No matter what the snow problem, this combination is "tailor-made" for the job. City streets, trunk highways, farm-to-market roads can be opened and *kept* open with this outfit. The Sicard Snow Master handles *any* snow easily and accurately, either blowing it clear of the road, or loading it into trucks. With the power and control of Four-Wheel Drive and Steer, an Austin-Western Grader will take the rotary where it's needed in the shortest possible time and will keep it working in places inaccessible to ordinary machines. An Austin-Western Grader, plus a Snow Master . . . this is the "Powerhouse" combination—"Blockade Breaker" in the war with winter.

Opening a road in the Rockies. Note the depth of the snow.

"Precision" loading from any angle is easy with the Sicard.



Snow is blown any distance from 3 ft. to more than 150 ft.

Chute telescopes for long or short range casting.

Chute rotates for casting or loading to either side.

Blower Housing rotates. Casts to either side, or through chute.

New Drilling Machine

■ A new drilling machine that features an integral air-leg feed and automatic air-water back-head has been announced by the Thor Power Tool Co., 175 N. State St., Aurora, Ill.

The Thor one-man-operated drill has a 45-pound sinker rock drill and a 2¼-inch-diameter feed leg, available in 36 and 48-inch lengths. The drill can be removed from the leg and used as a sinker by loosening one nut.

Other features of the drilling machine include six-position throttle control from complete shut-off to full air and water. A single air hose supplies air to the drill and leg. There is a hinge joint between the drill and leg with tension adjustment. Controls are on the back head. The drilling machine has an aluminum cylinder and piston, and its total weight is 80 pounds.

For further information write to the company and request Bulletin JE 1640, or use the Request Card at page 18. Circle No. 690.

Evaluates Rubber Roads

■ A recent publication of The British Rubber Development Board describes a number of rubber roads in this country and discusses various rubber-mixing methods.

Speaking of one stretch which has sustained heavy bus and other vehicular traffic, the booklet states that the general condition of the surfacing is perfect after four years use. Describing a laying on a road with a grade of 1 in 8, the booklet points out that in spite of this steep grade there was no slipping of the binder.

The booklet concludes that there can be no doubt that the addition of rubber to hydrocarbon binders improves them. According to the writer, the advantages offered by the incorporation of rubber into road surfaces justifies the additional expense.

To obtain this literature write to the Natural Rubber Bureau, 1631 K St., N.W., Washington 6, D. C., or use the Request Card at page 18. Circle No. 822.

Bendix-Westinghouse Makes Appointments

Three executive personnel appointments have been made by the Bendix-Westinghouse Automotive Air Brake Co.'s plant in Oklahoma City, Okla.

William L. Collins is branch manager of the new plant and will be in charge of all operations. He joined the organization in 1936 as a sales representative and has been Chicago regional manager since 1947.

Charles H. Young, Jr., is branch engineer and Calvin F. Zoltner is office manager of the plant. Mr. Young has been sales engineer in the central region since 1949. He joined the company in 1948 as a test engineer. Mr. Zoltner, who has been with the organization since 1942, has been assistant supervisor of the cost department at Elyria, Ohio.

Crib sections are unloaded from trucks by a Link-Belt Speeder crane, then hoisted one at a time to the top of the wall by a similar unit. The narrow confines of the job are evident from the right view.

Falling Rock a Hazard on Crib Wall Job

Two-man crew comb bluff face for loose rock to protect workmen on Mississippi River job

By RALPH MONSON, Field Editor

(Photo on page 1)

"DANGER—FALLING ROCKS" is a warning that applies to every man every workday minute on the construction of a concrete crib wall to protect an eroding sandstone bluff. The wall is at Lock Dam No. 1 on the Mississippi River at Minneapolis, Minn., and ever-present hazard makes it imperative for the contractor to conduct an adequate safety program as a part of the project.

The uppermost locks in the Mississippi River 9-foot channel system

PRECISION ENGINEERED LeBus snatch blocks

Here is a new block that is superior in every way. That is, if you are looking for a snatch block that is strong, tough, and dependable. One that you can rely on being constantly on the job regardless of how tough the job or how bad the weather. LeBus block requires no tools other than your hands, can be taken completely apart for oiling or other inspection and re-assembled in a matter of a few seconds, no nuts or threads to foul, burr or lose, is completely guaranteed against any failure which might be made in line with the manufacturers specifications. All parts are completely drop-forged, (no castings) heat-treated, quenched and drawn to make this snatch block fully reliable and dependable under any and all conditions of operations. The LeBus block is priced competitively and can be secured through any wholesale jobber throughout the United States. For further information write direct or have your supply source write for catalog page 1000 for complete information on the five sizes of LeBus blocks.

Save and be safe in 1953 . . . use top quality LeBus Snatch Blocks.

LEBUS

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LeBus Bulldog Load Binders.

LeBus Tail Chains.

Contractors—First Increment — 2,350,000 sq. ft. — Grannis & Sloan, Thompson, Street & Wattinger
Second Increment—1,645,000 sq. ft.—Batson-Cook Company

Vacuum Concrete Produces 272 Panels Daily on Georgia Job

Here is the Vacuum Lifter stripping a 5' x 18'-6" roof panel eighteen hours after pouring using a 5.65 standard Portland Cement mix.

The normal operating schedule on this job at the Albany Marine Corps Supply Depot produced 272 of these panels every day. With the use of high early strength cement and vacuum processing panels can be poured *twice* a day in the same molds.

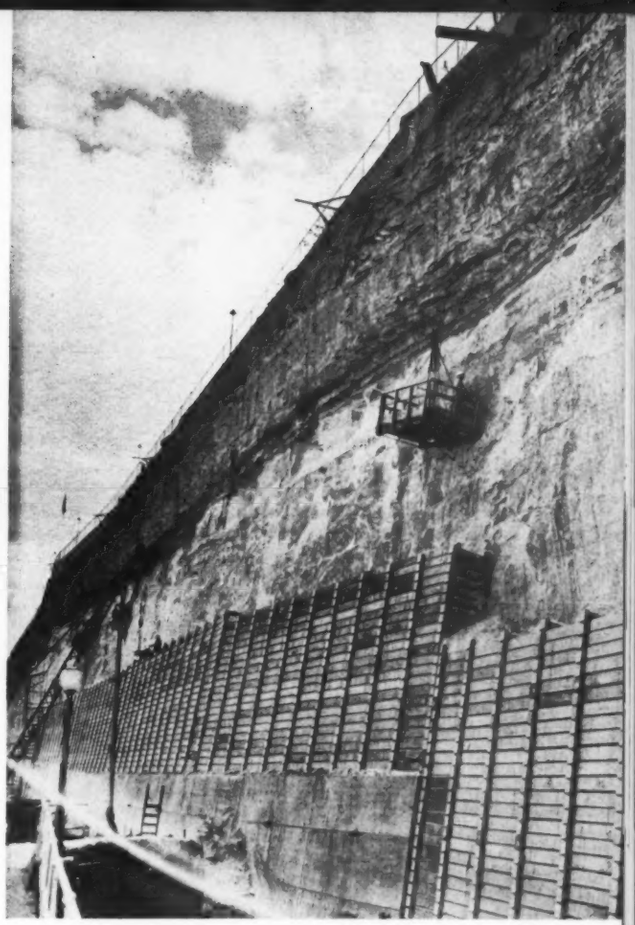
Panels were membrane cured without steam. Vacuum Processing produced strong, durable panels, easy to produce and easy to erect at a remarkably low cost.

Write for the new literature on how Vacuum Concrete can help you on your jobs. *It wins contracts.*

VACUUM CONCRETE, INC.

4210 Sansom Street, Philadelphia 4, Pennsylvania

A crew of two men are lowered over the edge of the bluff by a Lima Paymaster crane. They comb the face of the cliff and remove loose and dangerous sandstone projections that are potential hazards to workmen on the crib wall below. *C. & E. Photos*



lie very close to a bluff that towers almost vertically about 130 feet above water level. At the edge of the bluff is a paved street with the Minnesota Soldiers' Home and important buildings nearby.

Like typical river banks in this area, the bluff consists of an exposed face of St. Peter sandstone, rising more than 80 feet above low water. A few feet of shale or soapstone lie above the sandstone, the shale capped by a layer of Platte-

(Continued on next page)

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FOR SEAL COAT — PATCH WORK

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PD3

Standard Steel Works, NORTH KANSAS CITY, MO.

A MESSAGE TO CONSTRUCTION ENGINEERS

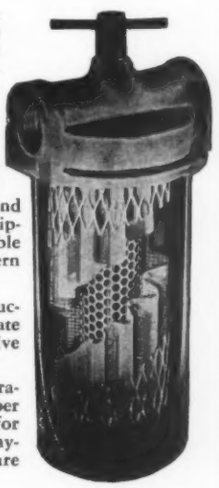
Sump Type (Cutaway)

An important phase of the construction industry is the need for dependable and economical maintenance of equipment.

We all know from experience that poor equipment saves no one money. There is no before hand calculating the cost of delays in completing a job and in lost opportunities. Equipment that is not dependable does not fit into the modern construction picture.

For these reasons, construction engineers concentrate much effort upon preventive maintenance.

In equipment where filtration is a problem, remember Marvel Synclinal Filters for protecting liquids in all hydraulic and low pressure systems.



Line Type (Cutaway)

2½ TIMES MORE ACTIVE FILTERING AREA!
with
MARVEL SYNCLINAL FILTERS

MARVEL FILTERS are available in both sump and line type models. Individual capacities from 5 to 100 g.p.m. and in mesh sizes from 30 to 200. Both types may be easily disassembled, cleaned and reassembled by any workman. Line models operate in any position and may be serviced without disturbing pipe connections. You can depend on MARVEL FILTERS for efficient preventive maintenance.

★ **WATER FILTERS** Both our sump and line types are now designed for use in all water filtering applications. No changes have been made in the basic Synclinal design.

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Falling Rock a Hazard On Crib Wall Job

(Continued from preceding page)

ville limestone approximately 30 feet thick. A few feet of glacial drift remain above the limestone.

The sandstone, a relatively soft material, erodes quickly from the action of the river, wind, rain, and frost. But the limestone's loss from weathering is negligible.

As a result of this unequal weathering, the limestone layer has been deeply undermined, creating a heavy and dangerous overhang. It is being removed while the sandstone face is given protection under a million dollar contract between the St. Paul District Corps of Engineers, U. S. Army, and the New London Materials & Construction Co., Willmar, Minn.

Brush mats, lashed together, protect the toe of the slope below the water line. They are anchored against the current and sunk in place by loading them with rock from the skip in the foreground.

The overhanging limestone ledge is first trimmed to a straight line. Then a protective facing, consisting partly of a poured concrete retaining wall and partly of a precast-concrete crib wall, is constructed over the exposed sandstone face. Finally, the toe of the walls is protected against river erosion by a brush mat and riprap below the water line and a layer of filter gravel and riprap above the water line.

Safety Program

While the project is approximately a quarter-mile long, its average width is only about 50 feet, so that practically all work must be done either on the face or at the base of a nearly vertical bluff. Realizing the importance of safety, especially in this trecherous location, the contractor carries on a continuous and effective safety program.

Each new employee is individually briefed on safety before being sent out on the work. His responsibilities to the rest of the men, the nature of potential hazards, and means of avoiding accidents are clearly explained to him.

Individual talks and weekly safety meetings are only the start of the safety program. Numerous devices are used to avoid accidents on the job. A typical example is the specially built Waco steel scaffold used as a stairway by workmen to get from river bank level to the top of the crib. The scaffold has offsets to match the slope of the wall and is equipped with handrails. A steel canopy on top of the scaffold sheds falling rocks, safeguarding workmen on the steps.

Scour Bluff Face

The exposed bluff is examined continually for the detection and removal of particles and dangerously fractured projections. This work is done by a crew of two men working on a platform that is suspended over the bluff from the boom of a Lima Paymaster crane. The crane, traveling along the road at the top of the bluff, can maneuver the platform to any point on the vertical face. A signal man, leaning over the fence at the top of the bluff, transfers signals from the men on the platform to the crane operator. He also handles the tag line that prevents the platform from rotating, and the hose line which supplies compressed air to the platform.

The men on the platform use a length of ¾-inch pipe, connected to the air hose and supplied with air by a Jaeger 250-cfm compressor, to remove small pieces of loose rock. With this same tool, it is easy to drill holes into the sandstone to depths of several feet. Dangerous projections are sometimes removed by drilling a series of holes through them in this manner, loading the holes with light charges of dynamite which are then detonated.

All equipment is inspected periodically to detect worn cables and similar mechanical defects before accidents are caused.

Overhang Removed

The project started in 1951 but has been interrupted by cold winter weather and high water. It is expected to be completed in October 1953.

Averages over 9,000 cu. yds. per 10-hour shift...*with help of TIMKEN® bearings*

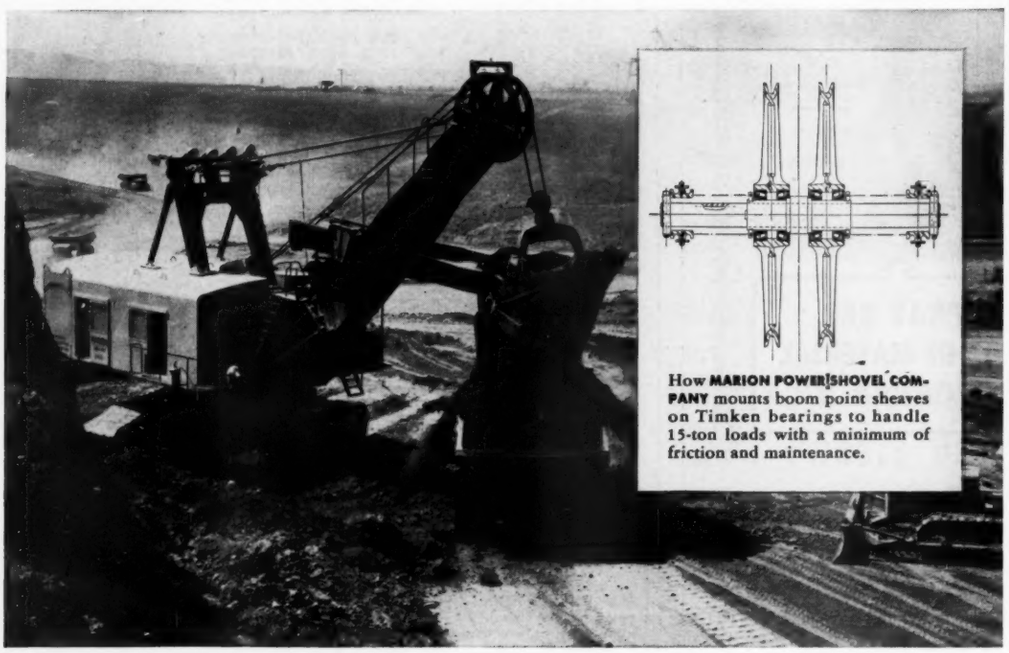
YOU can imagine the stresses involved in digging, swinging and loading 15 tons of earth in as little as 18 seconds. Those stresses are one reason why the boom point sheaves and hoist drum shaft of the huge new Marion 191-M shovel are mounted on Timken® bearings.

These bearings have proved their ability to carry the biggest loads the shovel might conceivably throw on them. On a huge dam excavation project along the Missouri River in South Dakota, one 191-M had to gouge its loads out of solid shale *without benefit of blasting.* But Timken bearings are gluttons for overloads and shock. Line contact between rollers and races gives them great reserve capacity. And case-hardened Timken bearing rollers and races have tough cores that make them virtually shockproof.

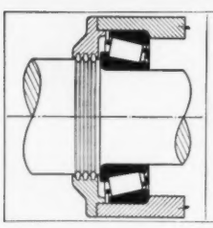
The maintenance of 8 separate points on the 191-M has been simplified by the use of 8 Timken bearings. Their extreme precision keeps housing and shaft concentric. This helps keep dust and grit from finding their way into the bearings, by making closures more effective. And since Timken bearings' tapered rollers take thrust as well as radial loads, there are no extra thrust bearings to maintain.

Normally, Timken bearings last the life of the shovel machine in which they're installed. Good reason to specify them on the machines you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **MARION POWER SHOVEL COMPANY** mounts boom point sheaves on Timken bearings to handle 15-ton loads with a minimum of friction and maintenance.



LUBRICANT STAYS IN —DIRT KEPT OUT

Because Timken bearings hold shafts concentric with housings, closures are made more effective. Lubricant is retained, dirt and moisture kept out.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

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TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬮ AND THRUST →⬮← LOADS OR ANY COMBINATION →✳←

The first step was the removal of the limestone overhang at the top of the bluff. To do this, the contractor drilled a series of holes at 8-inch centers on a pre-determined straight line through the 30-foot depth of limestone. Drilling was done by two Thor wagon drills, receiving air from two Jaeger compressors, a 315 and a 250 cfm. Light charges of dynamite blasted away the overhanging limestone to a straight, neat line. The material fell to the river bank below, and draglines later loaded it into trucks which hauled it away.

A low retaining wall was then constructed on top of the limestone to hold the earth overburden and support the sidewalk and roadway which edge the bluff. A chain-link fence on the retaining wall keeps people from accidently falling over the bluff. Most of this phase of the work was completed during the winter of 1951-52.

Flood Halts Work

In the spring of 1952, the contractor started excavating the 9,000 cubic yards of limestone which had been dropped to the edge of the river as well as some 36,000 cubic yards of sandstone which were to be removed. However, before 10 days work had been completed, the river rose up to the highest levels ever recorded in this area, flooding the project and stopping work until July.

The high water not only stopped the work but also washed out a lot of sandstone, necessitating a change in the retaining wall's design. The protecting wall had to be thickened to replace some of the sandstone which had been washed out.

When the flood waters receded and the cleanup task was complete, the contractor continued the excavation to about river level, and placed concrete footings for the retaining wall and crib wall. The heavily reinforced footings are 5 feet wide and 18 inches thick.

Concrete Retaining Wall

The guide wall at the lower end of the lock lies very close to the bluff, leaving insufficient room for the slope of the riprap and crib walls. In this area, a concrete retaining wall 270 feet long and 26 feet high protects the lower face of the bluff and serves as a base for the crib wall, which rests on top of the retaining wall. In places where the 1952 flood erosion was severe, this concrete wall has a maximum thickness of 14 feet.

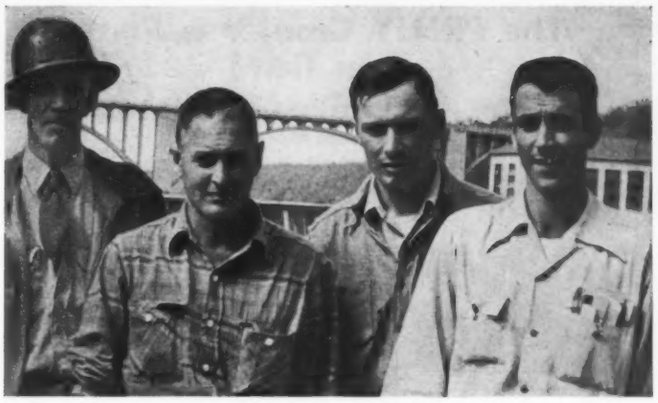
The 2,700 cubic yards of concrete for the wall, as well as all other concrete poured on the job, were furnished by Guaranteed Concrete Co., St. Paul, Minn., and delivered to the job in ready-mix trucks. The trucks discharged the concrete into two 1-cubic-yard Gar-Bro bottom-dump buckets, and Link-Belt Speeder LS-85 cranes hoisted the buckets to the forms.

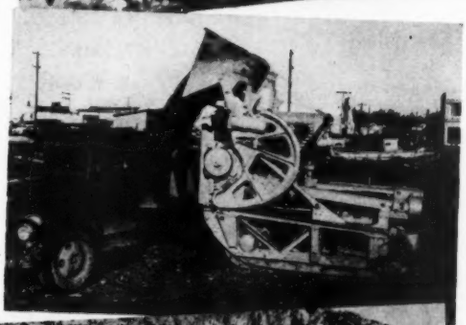
Since forms could not be supported on the sandstone face, it was necessary to use a cantilever-type form, anchored to the previous pour. Lifts of 5 feet 9 inches make up most of the wall, with vertical construction joints spaced approximately 24 feet apart.

For the remaining 1,383 feet of

(*Continued on next page, col. 3*)

Left to right are James Von Lorenz, resident engineer for the Corps of Engineers, James Richards, project superintendent for New London Materials & Construction Co., Cliff Grindy, assistant superintendent, and Bill Watson, office manager.





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When jobs are tough — it's more imperative than ever that an Eimco be selected to do the job.

Eimcos are built heavy, for dependable operation on the roughest, toughest jobs; for handling rock, sticky clay, gravel or any combination of hard to load materials.

With Eimcos you get a faster loading cycle — forward to dig and load back to discharge into the truck or railroad car. This action makes it easier on tracks and rollers for less maintenance and repair.

Quantities loaded can run from 300 to 350 yards per hour depending on your conditions.

Let an Eimco representative show you a machine working near you. Write for more information.

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(C. L. BALLARD)
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Falling Rock a Hazard On Crib Wall Job

(Continued from preceding page)

the project, a precast-concrete crib wall covers the exposed sandstone face from water level to the bottom of the limestone.

Concrete Crib Wall

The crib wall is a series of cells, made by placing a series of precast-concrete headers and stretchers. Stretchers for the outside or closed face are 6 inches wide, 10½ inches deep, and 6 feet long. The ends are notched to fit over the headers. Open-face stretchers for the back face are 6 inches deep, 6, 8, or 10 inches wide, and 6 feet long.

Headers are I-shaped, with stems 5 x 10 inches in section and heads 10 inches square. Some headers are 4 feet long and others 6 feet long. A few special units are required where standard conditions do not apply. All crib units are made of 2,500-psi concrete and are reinforced with ⅜-inch bars. Individual pieces weigh from 290 to 500 pounds.

All crib units are manufactured by North Star Concrete Products Co., Minneapolis, Minn., and are delivered to the job by truck. One of the Link-Belt Speeder cranes unloads the units from the trucks ten at a time, and stockpiles them at the river's edge. Using a special job-made tong, a crane picks up the units one at a time and hoists them to position on the wall. There, they are carefully put in place by workmen.

The contractor first tried cable slings for hoisting the crib units, but this method proved far too slow and cumbersome. The specially designed tongs are adapted from timber tongs. The pointed ends of the timber tongs are replaced by pieces of 2 x 2-inch angle, about a foot long, welded to the end of the tong arms. The angles grasp the crib units so firmly that it is unnecessary to have the hook accurately centered on the unit. Tongs are quickly attached and detached from the crib units by simply opening or closing them by hand when the cable is slack.

The crib wall is battered at a slope of 1 horizontal to 6 vertical. It is anchored at intervals of 12 to 18 feet horizontally and 12 to 15 feet vertically, with 1-inch bars grouted into holes in the sandstone bluff.

Air Drills Rock

New London Materials & Construction Co. drilled 3-inch holes in the sandstone for these anchors. It used a drill consisting of a 2-inch pipe cap with a series of 3/16-inch holes in a circular pattern in the end of the cap. When air from the 250-cfm Jaeger compressor is applied, this device quickly and easily produces holes 3 inches in diameter and up to 12 feet deep.

Anchor bars are placed in the holes and grout is hand-rammed around the bars. The protruding ends of the bars are locked into the crib wall by casting sections of concrete over the ends of the bars and around several units of the crib.

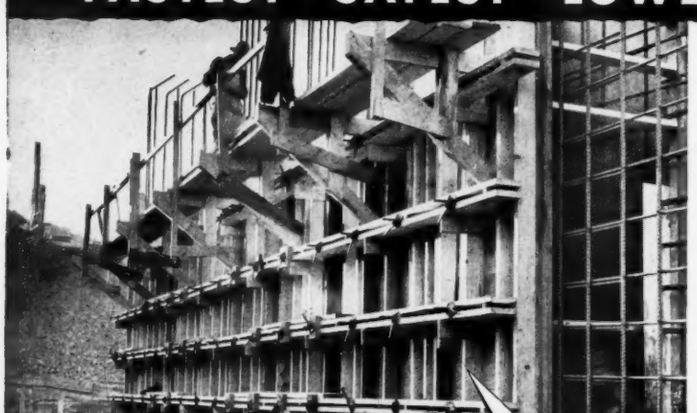
Crib units are placed during the day shift and backfilling of the sections is done by a small night crew. A 7.5-kw Onan portable gasoline-driven generator supplies lights for the night crew. Cells of the wall are backfilled using 9 inches of filter gravel against the outside face and filling the balance of the cell with compacted sandstone. The backfill is placed by one of the Speeder cranes using a clamshell bucket.

At the top of the sandstone, where the crib wall joins the limestone, the fill is covered with a 2-inch bituminous mat that seals the cells and causes water to run off over the wall.

Brush Mats and Riprap

The lower edge of the crib wall is protected by a brush mat and stone riprap below water level and a gravel filter and stone riprap above water level. Willow brush mats were fabricated near Hastings, Minn., by a subcontractor and trucked approximately 30 miles to the job. Mats, laid in the water, are sunk by piling large rocks on them.

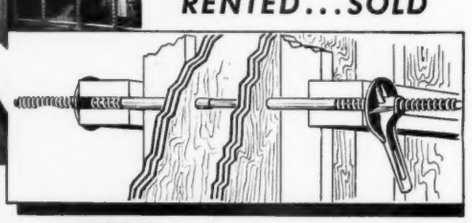
UNIVERSAL Spirolocs
HEAVY DUTY TIES
FASTEST—SAFEST—LOWEST COST



UNIVERSAL Spirolocs—heavy duty Form ties...*Permanent, reuseable equipment*...fast acting Acme threads...washers and stud rods last indefinitely; only *inexpensive* threaded tie rods expended.

Spirolocs provide fast erection...easy stripping...available in various time-saving combinations to fit the exact needs of your job.

RENTED...SOLD



Greater Tie Strength For less money with Spirolocs

5,000# Ties with ⅜-Tie Rods
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14,000# Ties with ⅝-Tie Rods
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SPIROLOC CONE NUT ASSEMBLY

The only fast acting form Tie with an absolutely positive spreader...assures smooth surfaced, watertight walls.

Write for complete details on SPIROLOCS and ask for catalog describing Universal Form Tying Accessories.

Spirolocs are Furnished with either Handle or Nut Type Washers

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Above the water line, limestone riprap is placed on a slope of 2½ to 1. Riprap consists of limestone rock of the following specification:

Maximum size	500 lbs.
75% of rock	15 to 250 lbs.
Not more than 10%	under 15 lbs.

Rock meeting this specification is produced by Kimmes Construction Co. at their quarry near Hastings, Minn., by passing the quarry-run over a grizzly to remove the finer sizes. Rock is trucked about 25 miles from the quarry to the job.

Personnel

The work is being performed under the direction of Col. A. H. Bagnulo, district engineer of the St. Paul District of the Corps of Engineers.

Project superintendent for New London Materials & Construction Co. is James Richards. Cliff Grindy is assistant superintendent. James Von Lorenz is resident engineer for the Corps of Engineers.

Combustion Gas Turbines For Mechanical Drives

■ A booklet on combustion gas turbine power plants for mechanical drive applications is available from the Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. The booklet describes four types manufactured by the company: 1,800-hp simple open-cycle; 5,000-hp compound open-cycle with regenerator; 5,300-hp compound open-cycle; and 7,000-hp simple open-cycle. Load diagrams, dimensioned outline drawings, performance curves, and colored cutaway drawings are presented for each type. Sample calculations show how to use the curves to determine various engineering data.

The booklet also describes design and structural features, and includes detailed information on the air compressor rotor and casing, gas turbine rotor and casing, combustion system, auxiliary assembly, control panel, and double helical gears.

Twelve factors to be considered in selecting a combustion gas turbine power plant for mechanical drive service are listed.

To obtain this literature write to the company and request Booklet B-5850, or use the Request Card at page 18. Circle No. 702.

Data on Matched Equipment

■ A new catalog shows 15 models of cable and hydraulic dozers and three models of control units available for Allis-Chalmers tractors. The Gar Wood equipment is illustrated with cutaway drawings, engineering drawings, and on-the-job photographs.

Among features discussed in some detail are the curvature of the moldboards, and how the blades are mounted on tractors.

A section gives details on the power package for the hydraulic blade, including tanks, pumps, valves, and hydraulic cylinders.

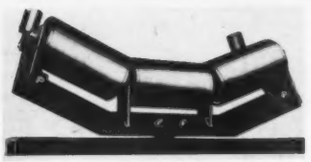
The mechanism of both front and rear-cable control units are illustrated.

To obtain Form F-165, write to Gar Wood Industries, Inc., 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 823.

New Conveyor Idlers

■ Three new conveyor idlers have been announced by Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.

A Mesabi-type impact idler has three rolls, each made up of rubber segments 6¼ inches in diameter and 1⅛ inches wide. These segments are mounted side by side on a 2¼-inch OD seamless tube. Flexibility of the segments allows the belt to roll smoothly over the idlers even though the material conveyed may not be evenly distributed on the roll. Trough of left hand and right hand rolls is 22 degrees.



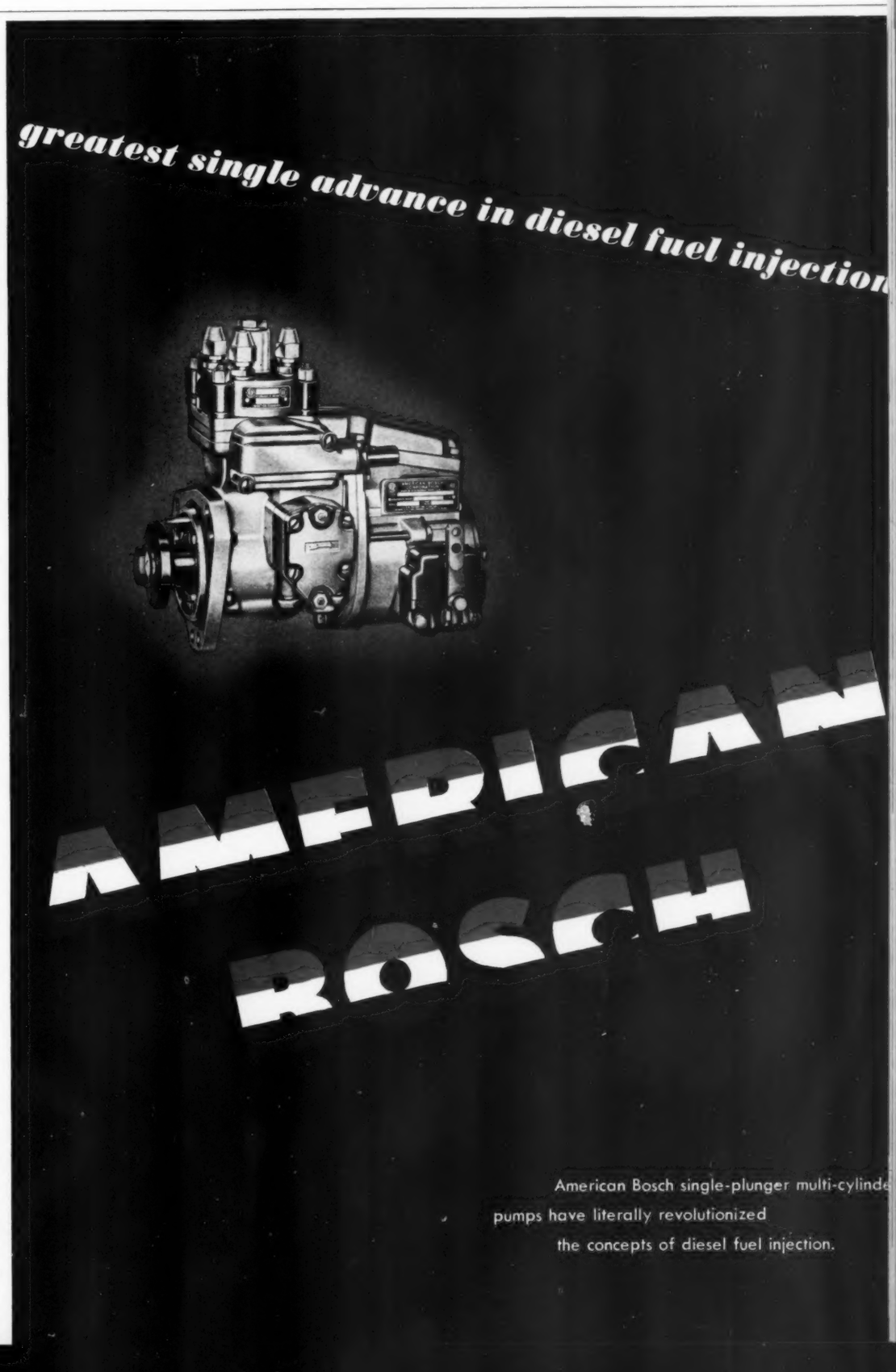
A self-cleaning return idler consists of a single roll made up of segments 6¼ inches in diameter and 1⅛ inches wide. The segments are evenly spaced on the roll except at the ends to permit the belt to travel freely without a build-up of material on the roller.

New 6-inch-diameter self-aligning troughing idlers have two features. The troughing idler frame is mounted on a pivoted base and the conveyor belt rides between two guide rollers. When weight of the material on the conveyor belt is unbalanced, the idlers swing freely to the left or right on the pivoted base to align themselves.

All of the new idlers are available for 24, 30, and 36-inch conveyors.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 824.

Sign up before it happens! Civil Defense needs you for wardens, police, and first aid.



Contractor Saws, Moves, Re-Erects Concrete Wall

A contractor's estimate for demolishing a 240-foot-long reinforced-concrete wall and reconstructing a similar wall at a different location totaled $991. But by cutting the existing wall into sections and resetting them where the new wall was to be built, the contractor brought the cost down to $750, thus effecting a saving of $241 on the project.

Using a Felker Di-Met Model 252 heavy-duty concrete cutter, he cut the existing wall and moved it to the new location in sections. The cutter was backed onto a Hyster fork-lift truck providing a vertical feed, and the 18-inch Felker segmented-type diamond blade first sawed through the 6-inch-thick concrete wall at the base. The lift was then energized, feeding the blade up through the wall at a slow speed.

A Felker Di-Met Model 252 concrete cutter, operating on a Hyster fork-lift truck, cuts a concrete wall into sections.

Each cut took 12 minutes, and a total of nine cuts were made in the 36-inch-high wall. Total cutting time, including all setups, amounted to eight hours.

Welding Equipment

■ New welding equipment for the consumable-electrode gas-shielded welding process has been announced by the Welding Department, General Electric Co., Schenectady 5, N. Y.

According to the manufacturer, high-speed metal deposition provided by the Fillerarc apparatus enables the operator to increase output on applications where filler metal must be added. In addition, the equipment simplifies control, decreases operator training time, and reduces operating maintenance costs.

Electrode wire of aluminum, stainless steel, mild steel, copper, magnesium, and other alloys may be used in the Fillerarc equipment with argon or helium shielding gas. The process can be used in down-hand, vertical, or over-head positions to weld aluminum or any alloy in thicknesses from 1/32 to 3 inches, and stainless steel from 1/16 to 1 inch. It is also suitable for welding aluminum-bronze, nickel, and magnesium.

Fillerarc equipment consists of three main components: a special self - regulating motor - generator - type welder, a pistol-like holder, and an electronic wire-drive unit.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 812.

How to Use Stud Drivers On Steel, Wood, Concrete

■ How powder-actuated stud fasteners are used in various tools and for attaching various materials is shown in a new booklet from Ramset Fasteners, Inc., Ramset Division, Olin Industries, Inc., 12117 Berea Road, Cleveland 11, Ohio.

Powder-actuated tools are used to fasten steel to steel, steel to concrete, and wood to concrete or steel, with nail-like drive pins and internally or externally threaded studs. The tools save time-consuming manual chores of drilling and anchoring formerly needed.

The manual lists specifications of over 20 fixtures and accessories, and of the 56 drive pins and threaded studs which make up the company's powder-actuated fastening line. Fasteners are available in sizes from ⅞ to 3½ inches for light-duty work and from 1½ to 4½ inches for heavy-duty applications.

Tables list the proper type of fastener and the proper powder charge for various materials.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 779.

Make Budgets and Manpower GO FARTHER

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HUBER MAINTAINER

There isn't a highway or street maintenance problem in the nation that more dollars and more men wouldn't cure.

If either of these limitations is pinching you, don't overlook a few important facts about the Huber Maintainer:

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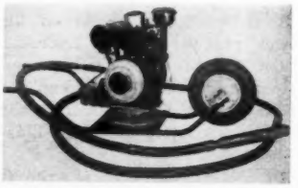

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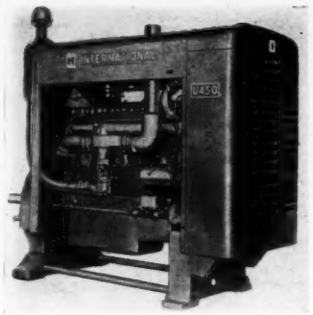


Announce New Engines

■ With the addition of seven new six-cylinder models, the International Harvester gas-gasoline power-unit line now includes 12 engines ranging from 16.5 to 200 net maximum horsepower.

A natural-gas unit, Model U-1091 is rated at 200 net hp at 1,600 rpm. Principal variations between this model and the International UD-24 diesel-power unit are a different cylinder head and the elimination of the fuel injection system. The new model is also equipped with lower compression pistons, a large updraft carburetor, magneto, spark plugs, and a gear-driven variable-speed governor.

Six other new models have International truck engines. All are equipped with updraft carburetors and variable-speed flyball-type governors, but can be furnished with downdraft carburetors and velocity governors. Power ratings of these units range from 50.5 net hp at 1,800 rpm to 102 net hp at 1,800 rpm.

For further information write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 774.

Sewer Joint Sealing

■ A catalog describing materials and application methods in its three-step cold applied sewer joint sealing process has been released by the Presstite Engineering Co., 3786 Chouteau Ave., St. Louis 10, Mo.

First step in the process is the application, 24 hours before the pipe is laid, of the asphaltic primer, a hard base asphalt priming paint. Then follows the application of Ropax, a packing consisting of a processed fibrous core impregnated and saturated with a blend of asphalts containing an inhibitor to prevent bacteria and fungus growth. In the final step, the joint is sealed with Kalktite, an internal-setting asphaltic cement which is a mixture of a special asphalt flux combined with a petroleum solvent and plasticizer, and a pure pulverized Gilsonite asphalt, blended with inert material fillers and asbestos fibre binder.

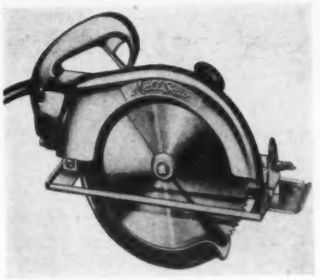
Kalktite is mixed and applied cold on the job, eliminating the need for melting tanks, pouring pots, and joint runners.

According to the booklet, the sealer forms a dense, watertight seal, flexible enough to allow for normal settlement of the sewer line and some deflection in alignment during backfilling.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 716.

Portable Circular Saw

■ A new portable electric saw with a 10-inch blade is announced by the Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill. Cutting capacities of the saw are a maximum of 3.62 inches and minimum of 2.38 inches for straight cuts. Bevel cuts from zero to 45 degrees, with 2.88 inches maximum depth of cut at 45 degrees, can be made. Blade speed is 3,500 rpm free. The saw weighs 20 pounds, its over-all length is 18 inches, and its width is 6.5 inches. It is 12¼ inches high. The saw runs on 115 volts, and a 230-volt model is also available. Generator size needed is 1,500 watts.



The saw comes with a combination blade, a wrench, lubricant, and instructions. Among other accessories available are cross cut, rip, planer and flooring blades. Other equipment includes dado head assembly, saw-tooth set gage, saw set, 1-pound hammer, cant-saw file, and metal carrying case.

For further information write to the company, or use the Request Card at page 18. Circle No. 758.

Petersen Chief Engineer

Richard W. Muchmore is the new chief engineer in charge of all production at Petersen Engineering Co., Santa Clara, Calif., manufacturer of earth augers. Mr. Muchmore was formerly associated with the Federal Mogul organization.

TERRIFIC!
NEW!
Whiteman MODEL "J1"
FLOATING-FINISHING MACHINE
NEW! SAFETY SWITCH handle shuts machine off automatically when operator releases grip.
NEW! BALL THRUST BEARING at top of handle makes trowel adjustment easier when machine is operating.
NEW! BRIGGS & STRATTON 4-cycle air-cooled engine. Easy, quick start, automatic lubrication, economical operation.
NEW! TIMKEN BEARING equipped gear case. Smoother, more efficient operation, less wear.
NEW! RUBBER COLLAR around base protects trowel adjustment arms from concrete.
NEW! BALL THRUST BEARING at base further facilitates adjustment of trowel pitch with machine in motion.
Climaxing 14 years of pioneering, manufacturing and improving concrete Floating-Finishing Machines, Whiteman proudly presents the new Model J1, the finest ever built. Faster, more efficient, it incorporates many valuable improvements, *plus* the time-tested exclusive features that have made Whiteman the World leader... "snap-on" trowels for floating, centrifugal clutch which tightens belt automatically and trowel-pitch adjustable with machine in motion. Summed up, it means smoother, easier operation and longer life. Send for catalog today!
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Modern 4-Lane Section Improves Highway

Plant-Mix Asphalt Paving Tops Out 9.4-Mile Project Which Also Includes Twin Concrete Bridges

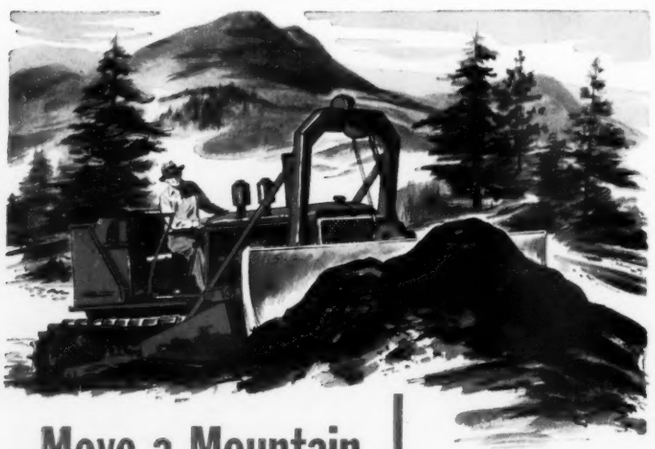
A Barber-Greene finisher lays 2 inches of asphaltic concrete over an aggregate base course.

North Of Tucson, Ariz., on State Route 84, Arizona's important cutoff between Tucson and Gila Bend, a 9.4-mile major highway construction project was completed last April, less than one year from the date the project was started. Martin Construction Co., Tucson contractor, had the prime contract which included grading, drainage, subbase, paving, and sealing.

A subcontract for asphalt paving was let to Pioneer Constructors, Inc., Tucson, and the Arizona State Highway Department had general supervision of the work.

The new improvement had long been necessary, because State Route 84 is the principal highway used, not only by Arizona vehicles but by transcontinental traffic moving east and west through the famed "southern route".

The new highway meets contemporary Arizona design standards in every way and, since it is all on a new location, it has formed the south half of a modern divided highway. The new facility is raised somewhat above the adjacent desert by the liberal use of borrow material; in fact, all but 3,000 cubic yards



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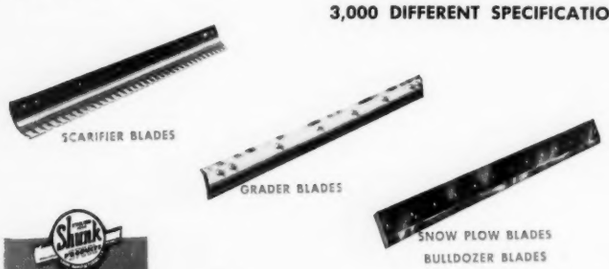
or Push Some Pebbles

Whatever the job, there's a SHUNK blade designed to do it efficiently and economically. For almost a century SHUNK has been manufacturing a full line of fine cutting edges rolled from top-quality steel to fill any maintenance or construction need . . . whether it's gravel, dirt, shale, snow or rocks.

Original equipment manufacturers specify them because of their durability . . . contractors use them because of their dependability . . . distributors like to sell them because they're priced right and deliveries are prompt.

Write us for recommendations on the proper SHUNK blade for *your* job.

3,000 DIFFERENT SPECIFICATIONS



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In Our 99th Year

BEST BLADES MADE

"There's an INSLEY working near you"

The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted—gasoline, diesel or electric powered. There's an Insley working near you.

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This Barber-Greene asphalt plant produced all the material for the paving mix.

Ray Day Photos

of the grading portion consisted of earth borrowed from nearby pits. Altogether, 269,000 cubic yards of borrow and drain channel work was involved in the dirt portion. Maximum embankment height was 6½ feet.

The crest of each embankment section was 36 feet wide, and was paved full width with 2 inches of asphaltic concrete. This work was in progress when CONTRACTORS AND ENGINEERS visited the job. Arizona's standard 3-inch aggregate base course underlies the asphaltic concrete hot-mix, and from 9 to 12 inches of select granular base material was placed underneath that.

Embankment subgrade and subbase material were designed to meet in every respect the contemporary 18,000-pound axle loadings prevalent as Arizona's maximum. Although the new highway passes through desert country generally, it crosses tricky watercourses which meander down from high country toward lower land. Because of this, it was necessary to place 20 concrete box culverts in the various fills crossing these drains, the biggest

(*Continued on next page*)

Immediate delivery

from *near-the-job* warehouses

Whatever your suction hose needs, you'll get prompt delivery when you call Continental. Extensive stocks of suction and other contractors' hose in a wide range of sizes are carried in the Continental Warehouses listed below.

No profit-eating delays waiting for long distance shipments. And no need to tie up your valuable working capital in large rubber goods inventories.

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This rugged 10-ton Jack is one of the most popular in the Duff-Norton line for average lifting, lowering, and pushing jobs because (1) It can use its foot as well as its head; (2) It has the strongest rack bar of any jack of its weight and capacity; (3) It is equipped with the exclusive, patented spring mechanism which assures absolute safety and longer trouble-free service life.

If you are not using the famous 1022 in your shop, get the complete specifications on this and the many other Duff-Norton Jacks. Call your local distributor or write the world's oldest and largest manufacturer of lifting jacks. Ask for catalog 203S, The Duff-Norton Manufacturing Company, P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.

DUFF-NORTON

"Giving Industry A Lift Since 1883" **Jacks**

Modern 4-Lane Section Improves Highway

(Continued from preceding page)

box being a 6-span 10 x 4-foot structure.

Two Bridges Also Included

Two major bridges were also included in the contract, consisting of a pair of identical structures 342.5 feet long. These bridges span Canyon Del Oro and Rillito Wash. The design of these bridges consists of a continuous slab deck of reinforced concrete set on ten piers spaced across the river, with Union Metal Monotubes under each pier to achieve H20 S16 1944 standards. Eight Monotubes were drawn under eight piers, and ten Monotubes were placed under the remaining two piers. Under each of two abutments in each bridge, five Monotubes were specified. Abutment piles were 35 feet long, and pier piles were 20 feet in length.

Although the bridges called for a conventional type of construction, the work was set up in such a way that an unusually good grade of concrete resulted, both in piers and in the decks. The piles were driven by a Koehring 401 crane, which handled a Vulcan No. 2 single-action hammer on its 65-foot boom. Instead of fooling around with a steam boiler at this short-term location, a Schramm 315-cfm compressor was brought in, and it powered the Vulcan hammer in excellent shape.

The driving crane did not have to work from mats and, because of the ease in handling, the Monotubes went down quickly—often as many as 10 units per day. All bridge concrete work was placed against forms which were made in prefabricated panels faced with plywood.

Because of excellent engineering design, the principal portions of each bridge were standardized, and forms could be used and re-used over again. Some of the forms were used as many as nine times without showing any ill effects. The forms were lightly oiled with diesel fuel before each pour, and provision against spreading consisted of Superior form ties, along with standard steel form bolts.

Truck-mixed concrete was brought in from a central plant in Tucson, and was hauled about ten miles to the site of the work. Concrete from the truck mixers was transferred to the forms directly, when possible, but where lifts were involved, the Koehring crane again doubled over as a hoisting device. A 1-yard GarBro concrete bucket was used in making these transfer pours.

The pours were made with careful placement and vibration of the material, so that the stripped surfaces were dense and free from air bubbles or honeycomb. In fact, the concrete stripped so clean that very little, if any, hand rubbing was done to improve the architectural appearance.

Grading: All Borrow

About the only unusual feature of the grading activity was the predominance of borrow material, but in all other respects the work followed conventional earth-moving methods. Since most of the borrow hauls were over 1,000 feet in length one way, fast rubber-tired hauling equipment was used to move the material as rapidly as possible.

The hauling fleet consisted of two Caterpillar DW20's with two Super C Tournapulls, all units heaped somewhat by sideboards to provide increased capacity. An International TD-24 tractor was used as a pusher, along with an Allis-Chalmers HD-19. Auxiliary equipment on the fill included two International TD-18's with bulldozers, and two double sheepsfoot units pulled by a TD-18 and a Caterpillar D7. Motor graders consisted of a Caterpillar No. 12 and an Adams Model 610 machine. A 5,000-gallon water tank, mounted on an Autocar truck, and a 2,500-gallon unit mounted on an International KB-8 were provided. The water was hauled from a nearby irrigation supply.

The dirt was placed in 6-inch lifts, compacted to about 90 per cent of its optimum density by 5 to 6 passes of the double sheepsfoot roller units. Moisture which had to be added to the material was placed on chiefly at the fill site. When the fill had been topped out, it was checked by surveyors, blue-topped, bladed to close tolerance by either of the motor graders, cross-sectioned, and inspected with a view toward final acceptance.

Subbase Preparation

Granular subbase, which was placed underneath the pavement for load distribution purposes, consisted of 80,000 tons of select material of granular structure and 19,000 tons of aggregate base course. A crusher-made material similar to the mineral aggregate used in the asphalt mix was produced in the latter case for the aggregate base course. Specifications for this product, for example, called for 100 per cent passing the 1-inch screen, 40 to 75 per cent passing the No. 10, and 3 to 10 per cent passing the No. 200 mesh.

All of this material was produced at a location about one mile south of the project and almost midway in

Now! A new "break" for the driver

. . . is a "break" for your delivery costs! The world's most comfortable truck cab cuts driver fatigue!

Keeping the driver happy by reducing driver fatigue is not the only virtue of the new Ford Truck DRIVERIZED CAB.

Easier driving, for example, means safer driving! Easier driving means greater efficiency in terms of more trips, more stops, more deliveries per day—which means a more profitable operation.

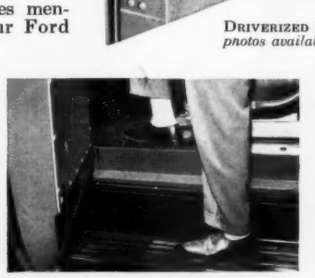
The new Ford Truck DRIVERIZED CAB is just one of many new *time-saving* features that help *get jobs done fast!*

For sustained speed travel, Ford provides new LOW-FRICTION power in V-8 or Six. For faster, easier handling, Ford provides Synchro-Silent transmissions in every model—and new "short-turn" front axles.

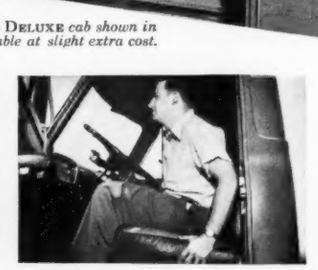
Both Standard and Deluxe DRIVERIZED CABS offer all the features mentioned on this page. See your Ford Dealer for full details.

DRIVERIZED DELUXE *cab shown in photos available at slight extra cost.*

SWING *open the new, wider doors!* Door handles are the easy-operating push-button type . . . like you get in quality cars. Door latches are new rotor-type.

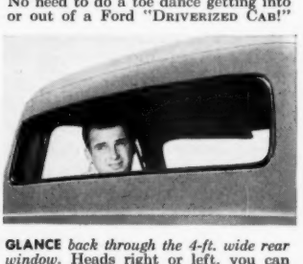


HOIST *your size 12's into the cab!* Plenty of room between the seat and door pillar. No need to do a toe dance getting into or out of a Ford "DRIVERIZED CAB!"



SLIDE *into the wide, comfortable seat.* Bounce on it to test the super-cushioning action of Ford's exclusive *seat shock snubber* and new non-sag springs.

SWEEP *your eyes across the new one-piece windshield.* With picture-window visibility like this you can really navigate. Safer driving, of course! Less eye-strain!



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relation to its length. A Cedarapids Junior Tandem rock crusher was set up in a native pit at the site, and it produced the material. An International TD-18, equipped with a Bucyrus-Erie cable dozer, dumped the raw material to a trap, which in turn fed the plant.

Granular material produced by the plant was stockpiled temporarily in a small 25-cubic-yard surge bin, loaded to a fleet of dump trucks hauling to the job, and then dumped according to measurement by a truck spotter who recorded the input of material. Plenty of water was added to the material as it was laid down and compacted, and as a motor grader cut the blended mixture out in thin lifts it was rolled by pneumatic machines. The two Tampo rollers were drawn by rubber-tire tractors.

Continuous-Mix Plant Setup

The central location of the gravel pit also governed the location of a Model 848 continuous-mix Barber-Greene asphalt plant, which Pioneer Constructors used for the paving operation. Fully mobile, by means of rubber mounting, this plant is capable of being taken down, moved in, and set up within a period of about one week. Pioneer Constructors purchased this Barber-Greene plant five years ago, and has since operated it at an average production of about 115 tons an hour, where the moisture content of aggregate does not exceed 5 per cent.

SC-6 asphalt for the plant-mix was supplied by American Bitumuls & Asphalt Co. through its Tucson office. Railroad tank cars loaded with this material were placed on a Tucson railroad siding, and transferred to transport trucks which hauled the material from that point to the job. A Cleaver-Brooks retort assisted in this operation in cases where the railroad cars arrived slightly below pumping temperature. Each transport truck was equipped with its own asphalt pump, and was self-contained so far as its ability to load and unload the oil was concerned.

At the Barber-Greene plant, a built-in asphalt pump was available for feeding the 750-gallon storage reservoir at the pugmill. Specifications called for a two-bin pull on the asphalt-mix proportioning, so all mineral aggregates were stored in one pile. A feeder gate from a tunnel below the pile placed the material on a rubber conveyor belt which took it directly to the dryer. Stockpiled material was fed to the trap by an International TD-18 mounted dozer blade.

SC-6 asphalt was stored in two tanks, each holding 6,500 gallons, which were horizontally mounted on individual frames equipped with wheels and rubber tires for full mobility. The tanks were not insulated, but steam coils were provided, and 16-hour-per-day firing at the central boiler plant kept the tank coils supplied. A 12,000-gallon light fuel oil tank was also necessary. It, too, was warmed by steam coils to increase the efficiency of the Ray burning system. The Ray burners on the dryer also had extra help from fans in the stacks, which set up a forced draft surge.

The main boiler was a 95-hp horizontal affair, fully portable, and was fired with a light grade of fuel oil. In addition to its function of heating the asphalt tanks, the boiler furnished steam for the pugmill jacket and tank, and supplied all lines between the tanks and pugmill which were steam-jacketed. For example, the main 3-inch asphalt line leading between these two points was jacketed with a 5-inch outer pipe. The boiler also operated the four stack blowers in the Barber-Greene plant, which increased the general efficiency of the dryers enormousiy.

Auxiliary equipment included a 45-kw Caterpillar diesel generator, which produced electric power for the screen motor, bucket elevator motor, and conveyor motors. An International UD-18 industrial engine was used to turn the pugmill paddles, and the dryers revolved with the aid of an International UD-14. A small Rex water pump was also used as auxiliary equipment to transfer boiler feed water from tank trucks hauling this material.

The hot-plant crew was small, including only a foreman, two firemen, one operator, and one laborer. One fireman came on at 10 p. m., warmed up the plant, and kept things hot all night. The day fireman reported for work at 6 a. m., so that by 7 o'clock, when truck drivers and other paving-crew members arrived, the plant was fully warmed up and ready.

Aggregates moving through the plant passed through a cold elevator into a double-drum 5-foot-diameter dryer, equipped at the feed point by a splitter device for feeding an equal amount of material to each drum. After coming out of the hot dryers, the mineral filler passed by way of the hot elevator to a Simplicity three-deck vibratory screen at the top of the plant, which separated it into the two classified sizes meeting specifications. These weigh hop-

(Concluded on next page)

superhighways . . .
built with
TELSMITH®
aggregate plants

America is growing a new set of arteries—toll expressways to form a network of superhighways throughout the nation. The famous Pennsylvania Turnpike System and the New Jersey Turnpike were built with the help of 15 Telsmith designed and equipped aggregate plants. Several Telsmith aggregate plants are now being erected to help build the new Ohio Turnpike. When other expressways are built, Telsmith aggregate plants will be on the job. Send for Bulletin 266.

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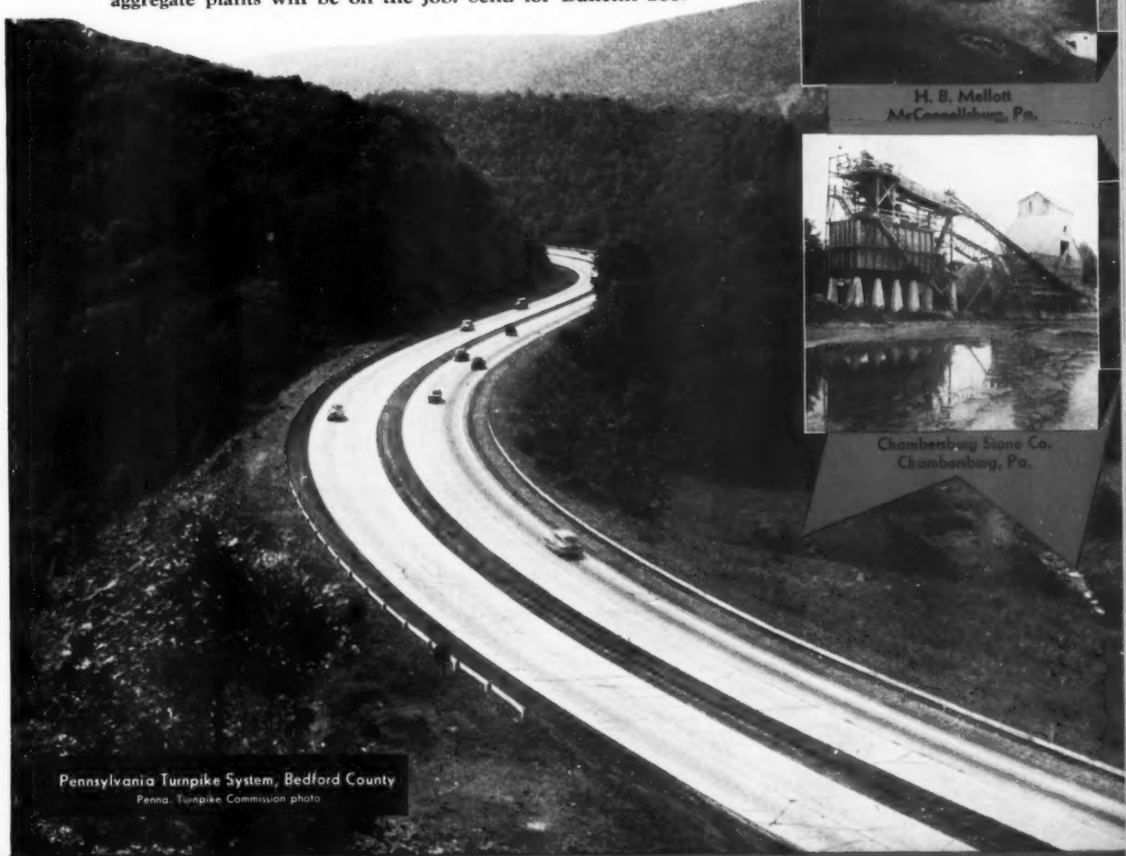

Pennsylvania Turnpike System, Bedford County
Penna. Turnpike Commission photo

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Modern 4-Lane Section

(Continued from preceding page)

pers, into which the material dropped, were equipped with steel feeders. Only the top and second decks of the screening plant were used because of the two-bin pull.

The top screen deck had a 1-inch scalping screen, while the next deck was covered with ½-inch mesh. Although the plant did not have a pyrometer, temperatures were continually watched by means of thermometers, one located in the large asphalt tank and the other in the hands of an inspector on the job. As a general rule, rock was heated to a temperature of from 250 to 275 degrees F, while the bitumen was boosted to about 250 degrees before its entry into the mix. The mix was sent out to the road at an average temperature of 230 degrees.

The following were the gradations for mineral aggregate.

	Per Cent
Passing 1-inch	100
Passing No. 10	40–75
Passing No. 200	3–10

Aggregates were weighed by a scale, while the bitumen was metered by a Kinney 2-inch asphalt pump. Five per cent of SC-6 asphalt was added to each batch. Trucks leaving the plant were weighed on a scale, the driver was given a ticket so that a permanent record could be made, and the material was hauled out to the laydown crew. As a general rule, about 8 tons was hauled in each truck Drivers oiled their own truck bodies after each second load, and no canvas tarps were required for the haul out to the highway.

Rapid Laydown Methods

Asphalt paving out on the highway was a smooth operation, for the simple reason that traffic was routed over the other highway while the new section was under construction. With the exception of the two new bridges, the paving was in the clear on a straightaway course, and equipment could roll at capacity.

The asphaltic-pavement material was laid by a Barber-Greene finisher on top of the aggregate base course, which had been primed by a shot of 0.5 gallon of MC-1 per square yard. The weather was generally cold during the winter months when the paving took place, so the 12-ton Buffalo-Springfield roller which compacted the asphalt worked close to the laydown machine.

Specifications also called for an armor coat, composed of a sealing asphalt with bedded chips. Stripping crews then finished the new road, and it was open to traffic by mid-April. Its completion has improved the traffic-carrying capacity of the existing bituminous 2-lane highway by more than 100 per cent, and has contributed an immeasurable safety factor to the motorists who now use the highway.

Personnel

Project field personnel included R. E. Martin, in charge of his company's operations, assisted by William Nellis, grading foreman; Mike Neilsen, crusher foreman; and Louis Bartram, general foreman. James Lewis directed paving work for Pioneer Constructors.

R. C. Perkins headed the Arizona State Highway Department, and C. B. Browning was construction engineer in over-all charge of the job.

Permite Personnel Shift

Three new positions have been filled in the Permite Paint and Varnish Division, Aluminum Industries, Inc., Cincinnati, Ohio, to effect wider sales and integrate operations.

R. Wain Bowman is director of sales, and John Magee is manager of industrial sales for the midwest. George Graman is plant manager.

Employee Relations Book

A casebook of arbitration awards, giving grievances presented, arbitrator's decisions, and comment by the editors, has been published under the title, "Human Relations Casebook", by the National Foremen's Institute, Inc., New London, Conn.

The handbook, edited by staff members of the Employee Relations Bulletin, contains more than 100 representative cases. Among the problems arising daily in business and industry that are dealt with in the book are absenteeism, vacation pay, grounds for dismissal, status of union stewards, overtime, and defective work.

Issues are clearly defined in the book, and bases for awards are explained. The handbook supplies information of value to those negotiating with unions, foremen, supervisors, and management representatives. A section of the book provides aid in drawing up contract clauses which are specific, clear, and inclusive. The book sells for $3.00 and can be obtained from the National Foremen's Institute, Inc.

Bin Gates and Valves

■ A bulletin covering its complete line of bin gates and values is offered by Stephens-Adamson Mfg. Co., Aurora, Ill. Units listed include the Twistite double-closure bin valve and the Moore bin gate.

The first unit consists of two rubber sleeves which are twisted shut by a rotating collar to form a dust and watertight lock. The second unit is for heavy-duty operations and consists of an apron belt which can be rolled away from the bin opening.

Complete details and dimensions are shown for slide gates, quadrant gates, and other conventional units.

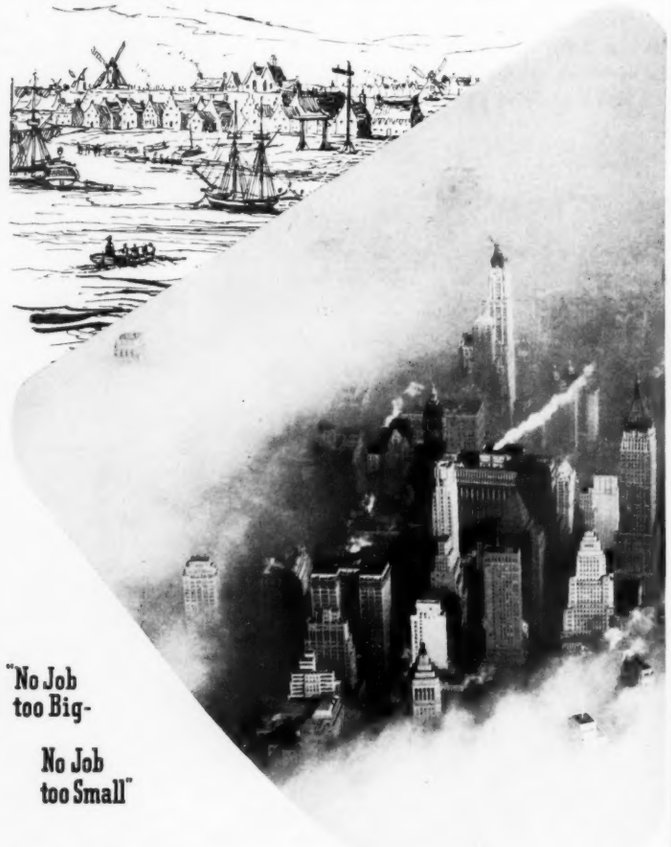
To obtain this literature write to the company and request Bulletin 1252, or return the Request Card that is bound in at page 18. Circle No. 825.

The Sky's the Limit!

This year, Manhattan is celebrating its 300th anniversary. No one has had a greater share in its development than the contractor, whose constantly improved building techniques have made possible this great concentration of industry, commerce, and cultural activities on a 22-square mile island.

Over the years, the Ætna Casualty and Surety Company has handled contract bonds for many of the great contracting firms which helped to mold the Manhattan skyline. Some of these firms, which today are Titans in the contracting field, have been Ætna clients from their earliest and smallest beginnings.

Thousands of contractors know from experience that the Ætna name on the bond is respected, that Ætna's helpful facilities are unmatched, that its financial strength is unquestioned. That is why so many contractors bond with Ætna — always.



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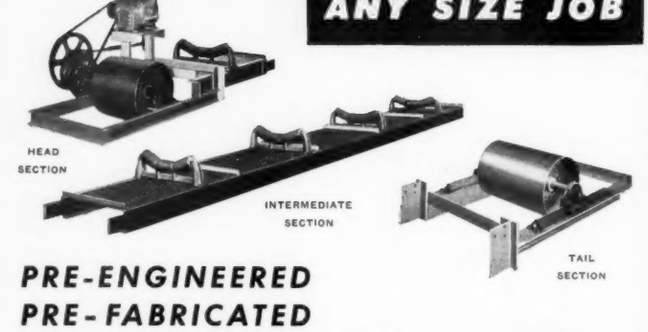

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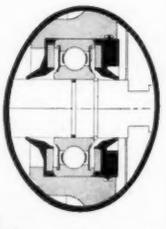

TRANSALL SECTIONAL BELT CONVEYOR SYSTEMS

Improved heavy-duty Tran-Seal Idlers never need re-lubrication, reduce maintenance costs.

New Barricade Sign

■ A new barricade sign is announced by Standard Signs, Inc., 3190 E. 65th St., Cleveland 27, Ohio. The frame of the sign folds so that the entire stand is collapsible and can be moved from one job to another. A large "road closed" sign which swings freely in a rigid-angle iron frame is topped by two or more red flags. The frame also supports a "detour" sign and a directional arrow sign so that complete directions are given by this one stand.

Signs and frame come in synthetic porcelain enamel. "The road closed" sign has a yellow background while the other signs have a white background.

The swinging sign measures 24 x 24 inches. The entire stand measures 49 inches to top of the flags and 65 inches wide over-all.

For further information write to the company, or use the Request Card at page 18. Circle No. 685.

Plastic Pipe Fittings

■ A new reducer insert tee fitting, in which the side outlet is one standard pipe size smaller than the run, is added to the line of fittings for flexible plastic pipe made by Carlon Products Corp., 10225 Meech Ave., Cleveland 5, Ohio. The new fitting, available in run size up to 2 inches, facilitates installation of stepdown laterals for waterlines and sprinkler systems.

The fitting is joined in the same way as standard insert couplings. Sections of pipe are cut to the desired length, and the fitting is inserted. Stainless-steel clamps are tightened over the pipe and fitting to draw the pipe down over the serrations of the insert.

The new fittings are molded from a single piece of thermoplastic material and are guaranteed against rot, rust, and electrolytic corrosion.

For further information write to the manufacturer, or use the Request Card at page 18. Circle No. 729.

Flexible Metal Hose

■ A bulletin on flexible metal hose has been issued by the Atlantic Metal Hose Co., Inc., 123 W. 64th St., New York 23, N. Y. It contains illustrations of the company's line of high-pressure, interlocking, bronze and steel flexible hose; tar and asphalt hose; and necessary couplings. The bulletin lists all current applications and provides test and engineering data.

Bulletin 15-D is intended to help the user to choose the flexible metal hose best suited to his needs.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 693.

Data on Perlite Concrete

■ Data for the design of roof deck insulation, lightweight floor fill, and precast slabs and blocks is contained in a revised mix design chart for perlite concrete. The information, which has been released by the Perlite Institute, 10 E. 40th St., New York 16, N. Y., is part of a specification for perlite concrete recently adopted by the 49 perlite producing members of the institute. A separate specification for mixing and placing of perlite concrete roof deck insulation which is approved for use under bonded built-up roofing has also been established.

Portland-cement concrete made with expanded perlite instead of heavier aggregates can be used where light weight, insulation, and fire resistance are more important factors to be considered than great structural strength.

Perlite is a glassy volcanic lava rock mined in the western United States and shipped throughout the country to processing plants where it is popped in special direct-flame furnaces. The expanded perlite particles are white in color and made up of countless tiny glass-sealed dead air cells which account for the light weight and insulating properties of the material. Perlite aggregate for concrete ranges in weight from 7½ to 12 pounds per cubic foot.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 683.

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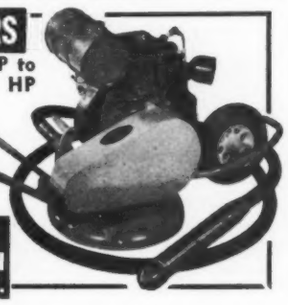

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MICHELIN TIRE CORPORATION, 150 Green Street, BROOKLYN 22, N. Y.

Eight-Inch Brick Walls Hold 370-Ton Roof

Juvenile delinquent center buildings have rigid roof supported by double-row brick walls

AT NORWALK, CALIF., where the California Youth Authority is building an 11-unit, $1,550,000 reception center and clinic for juvenile delinquents, the Los Angeles architectural firm of Austin-Field-Fry has come up with a design which successfully supports a 240-cubic-yard reinforced-concrete roof on the 8-inch brick walls of each building. Containing roughly 5½ tons of reinforcing steel, the double-row brick walls and footings are used to carry the rigid roof with its 18½ tons of steel reinforcement. J. E. Burrell & Sons, a Los Angeles contractor, is moving ahead rapidly with the work.

A similar design is being used in construction of other penal facilities at Riverside, Calif., according to engineers of the California Division of Architecture, under whose general supervision the project is being done. The Austin-Field-Fry design was made under contract with the California state agency.

Includes 11 Buildings

The Norwalk installation will be used as a screening center and clinic for law-breaking juveniles, and typical buildings for such a setup are included in the group. There will be an office-administration building, five identical dormitories, an amusement-recreation building, an educational building, a mechanical-maintenance building, a cafeteria, and a small building for housing utilities meters. The office building, which is the largest of the lot, will have 163 rooms for the general staff. It will be approximately 158 x 284 feet in size, with modified wings in the office-space area.

The five typical dormitories exemplify the design very well. These are low single-story buildings, 243 feet 8 inches x 46 feet 6 inches, with double rows of cell or room blocks. The reinforced-concrete roof on these buildings is 6 inches thick, with a 3-foot overhang beyond the walls. The brick walls consist of two thicknesses of Davidson 3 x 3⅜ x 11⅜-inch building bricks, strengthened somewhat by ½-inch round reinforcing steel placed both ways on 24-inch centers. At doors and windows this steel reinforcement is doubled. The steel sets in the center space between the rows of bricks, and is fastened monolithically by the addition of a poured grout mortar after the brick rows are in place.

The brick walls rest on reinforced-concrete footings, which in turn are set on fine-graded native subgrade material common to the area around Norwalk. It is a sandy material and, generally speaking, makes a good foundation for such footings.

The buildings are finished economically on the inside. Radiant heat is provided by steel piping in the concrete floors to eliminate possibilities of damage to exposed pipes. The most elaborate fixture in the place is a copper hot-water pipe inside the administration building, which is put together by special couplings fastened with silver alloy solder. The remainder of the plumbing fixtures are standard.

All concrete consists of a 6-sack, Class A mix, with 1½-inch minus aggregates, and no air entrainment. The concrete is designed for 2,500-pound compressive strength at 28 days. The specifications also require that brick for the masonry walls stand a compressive strength of 2,500 psi on tests.

Rapid Construction

Despite the necessity for supporting forms to hold the roof, concrete construction has progressed rapidly. Started last June, the project is scheduled for final completion by July, 1954, but according to present indications it should be finished sometime sooner. Under General Superintendent Russell Utterburg and Job Superintendent Lester Munson, a well organized method of constructing the buildings was set up from the start of the project.

Each building consists basically of a small grading job, concrete footing and floor pours, construction of the brick walls, forming and placing of the concrete roof, and finish work inside to complete the mechanical and other installations. The buildings are being erected in exactly that order.

All forms are being made up in prefabricated panels in the central carpenter yard at the site, and reused wherever possible. To a very great extent panels were used on the bigger building first and then cut down where necessary so they could be re-used on the smaller units. Footing forms were similarly made and set, except that some field carpentry was necessary. Fortunately very little ground water was found, so that the footing pours proceeded

Modern Aggregates Plant in Operation at Aden

Plant installed by Bechtel helps build new 100,000 barrel-per-day oil refinery for Anglo-Iranian Oil Company

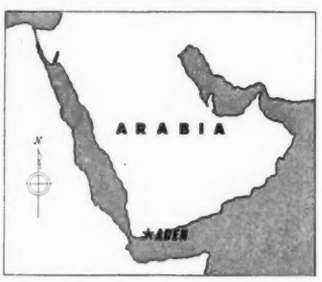
Anglo-Iranian Oil Company's new 100,000 barrel-per-day refinery, located at Aden near the southernmost tip of the Arabian peninsula, will be constructed with aggregates produced by one of the world's most modern all-purpose quarry plants.

The plant was engineered and manufactured by PIONEER Engineering Works at the request of Bechtel Corporation of San Francisco. It is supplying crushed stone for docks, jetties, piers, and concrete aggregates to be used in construction of the giant refinery and its attendant facilites.

One-half million yards of aggregates

Size of the project is shown by the fact that eventual plans call for use of nearly one-half million yards of aggregates. It is expected that between 12,000 and 15,000 construction workers recruited from most of the free nations of Europe and Asia will be employed on the job.

Bechtel, one of the world's foremost international builders, have used PIONEER equipment for a number of years, so it was natural that they called upon Coast Equipment Company, PIONEER's San Francisco distributor, for help in obtaining a high quality



plant of sufficient capacity, simple operation, and low maintenance.

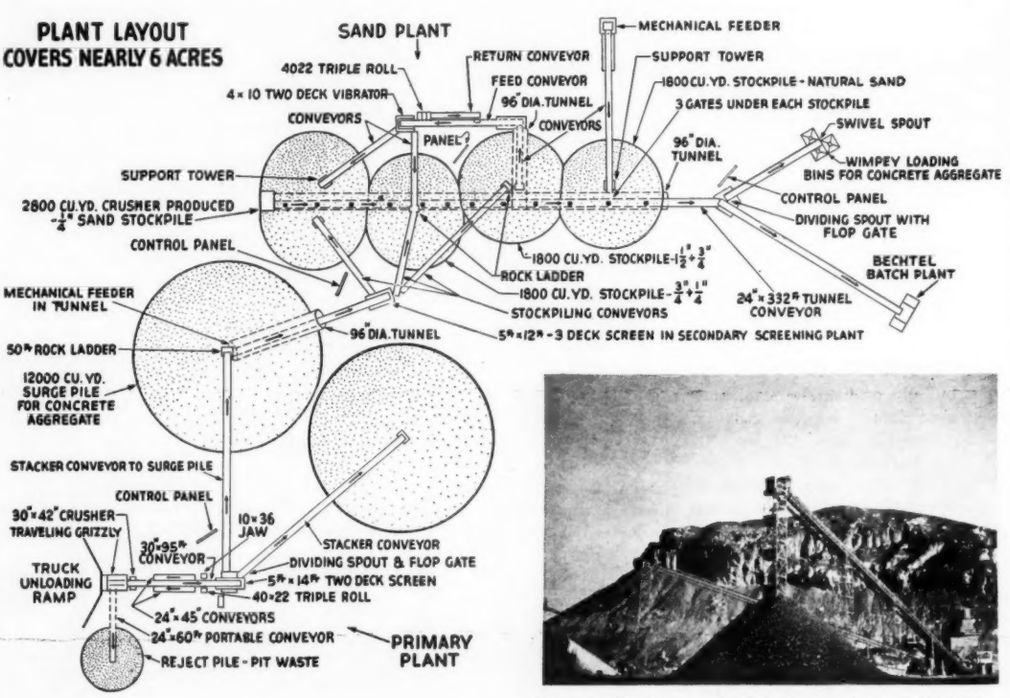
There was, of course, considerable preliminary work to be accomplished. First, a PIONEER engineering-geologist was sent to London to develop tentative plans for the big plant which was to supply materials for both Bechtel and the British joint contractor, George Wimpey & Co., Ltd. Then, at Bechtel's request, PIONEER's engineer went to Aden to survey possible quarry and plant sites.

A detailed examination of available aggregate sources disclosed that careful testing and analysis would be needed. With the material source and concrete-aggregate mix thus scientifically selected, PIONEER could assure Bechtel and Anglo-Iranian that all possible precautions had been taken to provide a Portland cement concrete of the highest durability and permanence.

The result is a complete, high production plant which has been called the world's most modern.

Occupies six acres

Although it occupies six acres, it can be operated by a crew of as few as five men. This is made possible by use of push-button stations on four strategically placed control panels. From these, conveyors and screens can be operated, material gates opened and closed, and the entire flow governed by remote control. Surge piles of materials requiring further processing to meet rigid specifications and finished product piles for concrete aggregates are provided.

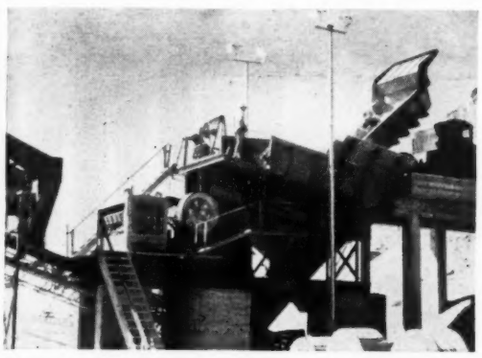


Surge pile of crusher-run materials to be screened into specification sizes for Bechtel or Wimpey as needed. In background is PIONEER stacker conveyor for surge pile of material for further processing.

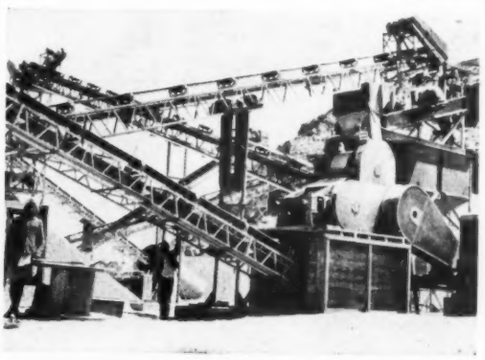
A worker points to the 370-ton concrete roof that is carried on the 8-inch brick walls.

Bricklaying is under way. This view shows how the steel reinforcement is placed between rows.

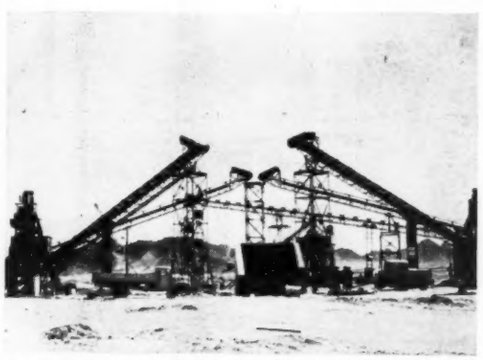
Ray Day Photos



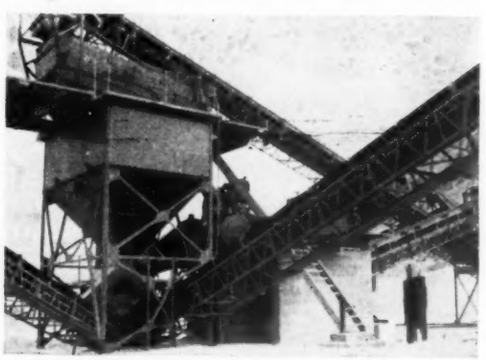
PIONEER 163 Primary Unit, consisting of 48" x 14' Traveling Grizzly Feeder and 3042 Jaw Crusher, receives tough trap rock from quarry, reduces it to minus 8". Material then goes via 30" x 95' conveyor to secondary crushing cycle.



In secondary crushing plant, material is separated on a 2-deck 5' x 14' PIONEER Mesabi Vibrating Screen. Plus 6" goes to 1036 Jaw Crusher. Material from 6" down to top specification size goes to 4022 Triple Roll. Both products are returned in closed circuit.



Stockpiling and Sand Plant delivery conveyors. Note tunnel abutment in foreground. In the distance, delivery conveyor from product tunnel to batch plant is visible.



Sand Plant, where surplus — 1½" + ¾" is used to manufacture specification sand. This enables the contractor to utilize the entire quarry feed as pay material.

The first of several shipments left PIONEER's Minneapolis factory in December, 1952. Eighteen flat cars were needed to transport the entire plant.

All equipment arrived at Aden intact and undamaged. There, a PIONEER erection engineer was waiting to supervise its installation. Sixty days later it crushed the first rock.

The "plant" actually consists of four major units . . . a primary and secondary crushing plant, a secondary screening plant, product stackers with reclaiming system, and a sand plant.

Hard, tough trap rock is blasted from a cliff 1000 feet away. After reduction to -1½" by the three primary and secondary crushers, it is surge-piled over a mechanical feeder and conveyor located underground in a reclaiming tunnel.

Material is then conveyed to a sizing screen which seperates it into three sizes (-1½" + ¾", -¾" + ¼", and -¼") each of which is stockpiled over a long reclaiming tunnel. Under each of these product piles are three electrically-controlled, air-activated gates which allow the operator to feed selected sizes onto the tunnel conveyor.

This conveyor is equipped with twin spouts and a solenoid-controlled flop-gate so it can supply either the batch plant or any one of three 21-yard bins. When desired, excess material from the -1½" stockpile over the tunnel can be sent directly to the sand plant.

Since the plant began production, operation has been almost continuous, and original performance expectations are being exceeded.

This is another example of the PIONEER EDGE in action. All over the world, PIONEER equipment is known for its high output and low maintenance. Couple this with an alert distributor organization and an experienced staff of engineering specialists who will survey distant locations and design an installation to fit the need . . . and you have a combination that's hard to beat.

If you are bidding on a large-scale overseas construction project, PIONEER's engineering staff is at your disposal. This gives you a competitive advantage that may make the difference when bidding is close.

For details, write to PIONEER Engineering Works, Inc., Minneapolis, Minnesota. (A subsidiary of Poor & Company, Chicago.)

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without too much difficulty.

The roof forms are considerably more than simple panels, because of inside ribs which strengthen the roof slab at intervals often as close as 8 feet. The recess for these ribs are formed with panels also, however, where that is possible. Support of the roof concrete is on 4 x 4 timber-bracing which shores up the weight from timber pedestals on the ground. As a general rule the entire formwork of the roof for one building is erected just after all the wall bricklaying has been completed. The electrical conduits and other ducts are then placed, along with the heavy steel reinforcement, and the roof is ready to be poured.

Western Concrete Supply Co., a commercial producer, has a materials contract for the supply of concrete to the job. A rented Bucyrus-Erie 22-B truck crane is used with a 1-yard transfer bucket to place the concrete. To help out on the roof pours especially, a small tractor-mounted cherry-picker hoist also works along, usually placing the concrete for the nearest ribs, along with the nearest part of the roof slab. Using both cranes, a placing rate of about 35 cubic yards an hour has been set by the crew. The concrete is delivered to the job in truck mixers. Roof-deck concrete is finished off by rough-wood floating and then coated with an asphalt-membrane application. The final roof will consist of a built-up application over the concrete which will make it watertight.

So far as bricklaying is concerned, it is routine except for one difference. In some of the buildings, window beams are being built up for several feet over the window openings with the same brick construction. In general, it is an easy bricklaying job and excellent progress can be made. Removal of the concrete shores after the roof pour has cured 21 days is the signal for installation of plumbing, pipelines, and other mechanical fittings to complete the buildings on the inside.

Completion of the unusual group of buildings is expected to solve a growing need for such an institution in southern California, and the buildings should be comfortable in all kinds of weather. Grounds will be landscaped after the buildings have been completed, and the juve-

(Concluded on next page)

Eight-Inch Brick Walls Hold 370-Ton Roof

(Continued from preceding page)

nile delinquent's first contact with the California penal system should be considerably tempered by the cleanliness and efficiency of the setup.

Personnel

The California Division of Architecture is under the general supervision of Anson Boyd, with F. R. Austgen as area construction supervisor, Earle Marsh as district construction supervisor, and J. H. Walker as resident construction supervisor. The Burrell organization is represented by Russell Utterburg, general superintendent, who is also a partner in the firm, and by Lester Munson, job superintendent.

Atomic Power Plant Design Study Awarded

A design study for a nuclear power plant, suitable for use in an area where electric power is not available at usual costs, will be made by the Walter Kidde Nuclear Laboratories, Inc., a privately-financed independent research laboratory devoted to the development of atomic power, and located in Garden City, Long Island, N. Y.

The contract for the study, which will be completed late this year, was awarded to the laboratories by the U. S. Atomic Energy Commission. The study will be concentrated on a nuclear power plant of 30,000-kw capacity. It will be a "single purpose" reactor, designed to produce only power, whereas "dual purpose" reactors provide for the production of power and plutonium as co-products.

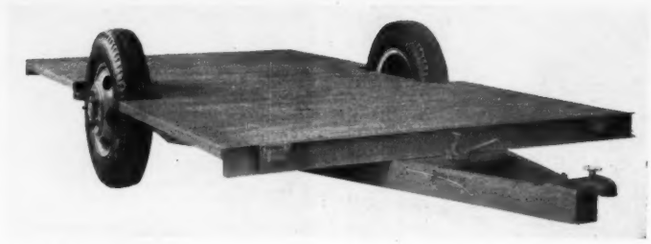
Officials at the Kidde organization have declared that such a low-cost reactor could be used in areas where electric power cannot be economically generated with conventional fuels. By concentrating on a "single purpose" reactor, the officials hope to design a nuclear power plant which will be able to compete with a chemically-fueled generating plant.

The contract awarded to the Kidde Laboratories calls for a detailed cost analysis to cover architect-engineer costs and construction and operating costs for a four-year period after the plant has been put into operation. It also specifies that the study determine the effect of plant location on reactor design and power cost.

Portable Lubricator

■ A portable lubrication unit that delivers 40 pounds of lubricant an hour from a bucket is shown in literature from the G & T Industries, Inc., 1428 Barwise, Wichita, Kans. The battery-powered Greasemaster has an automatic pressure switch that controls the unit at any desired pressure setting up to 3,000 psi. The lubricator weighs less than 50 pounds and comes with 25 feet of high-pressure hose. It operates on a 6 or 12-volt battery.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 735.



Tilt-Top Trailer

■ A new low-platform tilt-top trailer with an 8-degree climb angle is announced by the Miller Research Engineers, 428 S. 92nd St., Milwaukee 14, Wis. The Model D is designed for easy loading of such small crawler tractors as the Oliver OC-3 and the Terra-trac T-34 as well as rollers up to 4 tons, the manufacturer reports.

The trailer has an all-steel welded frame with tapered side channels and a straight-through H-beam axle. The standard 8 x 14-foot platform is planked with 2-inch oak. The platform is approximately 22 inches from ground level and has a 72-inch clearance between tires.

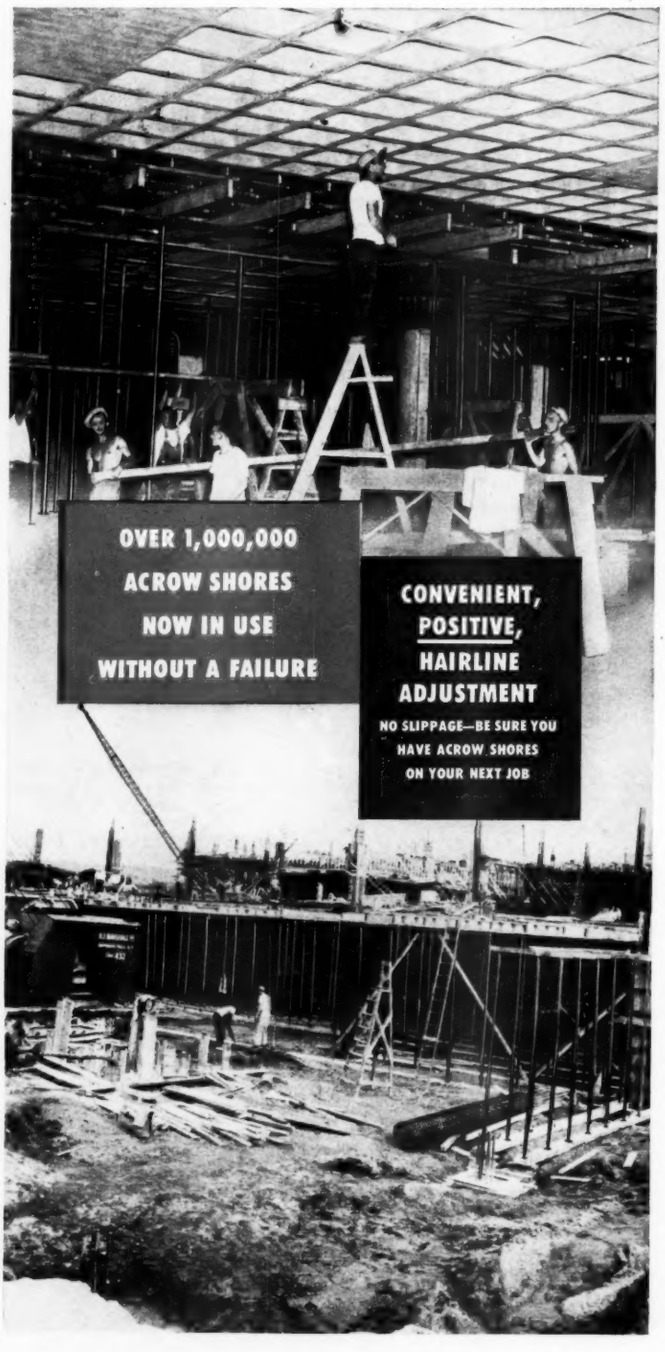
For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 689.

Portable Power Tools

■ A new catalog illustrating and describing its complete line of portable power tools is available from the Syntron Co., 227 Lexington Ave., Homer City, Pa. It includes descriptive information and specifications on the company's electromagnetic hammers and hammer drills and its complete line of portable electric drills. Other items shown include screwdrivers, nut runners, polishers, sanders, and grinders. Information is also included on the new electric impact wrench.

Self-contained gasoline hammer paving breakers and rock drills, and concrete vibrators of both the form and flexible shaft mass type are also described.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 682.



8,000

Photo shows Size 4 Acrow Shores being used 4' on center, extended to 14'6" under slab and steel pans.

A Koehring Twinbatch paver moves into position for one of the odd-shaped pours on the Barksdale Air Force Base concrete paving job. *Ray Day Photo*

Airbase Paving Allows Heavier Wheel Loads

Pavement overlay and new slabs are of cement-concrete for parking apron and runway at Barksdale Field

ACROW SHORES used on "Pan" job

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Sordoni Construction Company of Wilkes-Barre, Pa., used over 8,000 Acrow Shores for erecting additions to the IBM Plant at Poughkeepsie, New York. No horizontal bracing was required because of the high loading capacity of Acrows. Acrows are quickly adaptable and highly recommended for any reinforced concrete slab system. For safe, sure support, specify Acrow adjustable Steel Shores.

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1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5800 lbs.	2050 lbs.

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Acrow Engrs. (Pty.) Ltd., Sydney

AT BARKSDALE AIR FORCE BASE in Louisiana, where the Second Air Force of Strategic Air Command makes its headquarters, engineers and contractors have completed a construction program designed to solve one of the headaches of airfield managers everywhere: how to cope with heavier wheel loading.

Most of the airfield's parking apron and part of one old runway have been strengthened, either with an overlay of portland-cement concrete paving, or with new lanes of pavement 16 inches thick. The work, done for the U. S. Air Force under a Corps of Engineers contract by the firm of T. L. James & Co., Inc., Ruston, La., was finished this summer.

The job is interesting from several standpoints. From an engineering view, strengthening existing parking-apron slabs by the portland-cement concrete overlay method represents the optimum in good engineering and economy. But from a contractor's point of view, the necessity for short paving runs and, in many places, the difficulty of placing expansion and contraction joints to coincide with those in the older pavement present a number of problems. From the Air Force standpoint, the work brings Barksdale Field's parking facilities up to standards sufficiently high to take wheel loads up to 200,000 pounds.

The $2,401,800 contract held by T. L. James & Co., Inc., called for about 50,000 cubic yards of grading, a minor item, along with 133,000 cubic yards of portland-cement concrete paving. There were also some appurtenant utilities in the contract.

The need for the rehabilitation work was evident. Barksdale, formerly the home of lighter-than-average airplanes, had been constructed to take lighter wheel loadings. With the introduction of heavier planes, particularly bombers, a general strengthening of the parking aprons was clearly indicated. Future contracts will probably be let soon to strengthen runway ends and other portions of the field that take the brunt of punishment from heavier loads.

Approximately 14,000 cubic yards of the concrete pavement was earmarked for use as 12-inch overlay pavement on part of the existing parking-apron slab. About 49,000 cubic yards was allocated for 8-inch overlay paving. New 16-inch slabs,

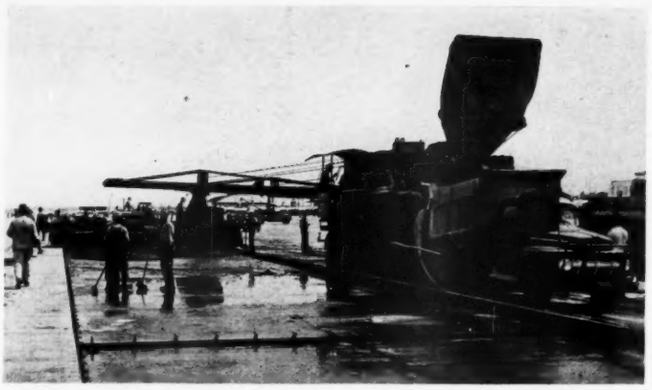
(Continued on next page)

Airbase Paving Allows Heavier Wheel Loads

(Continued from preceding page)

to round out these overlays, used about 70,000 cubic yards of paving. Design requirements under these new sections called for a 90 per cent modified AASHO compaction in the earth subgrade and no granular subbase underneath the airport paving slabs. On all free edges, where new paving slabs were laid, a 20-inch thickness was maintained. The job was planned in such a way that 25-foot lanes were laid in all but the narrowest transitional triangular sections. But because of the number of short runs, the contractor elected to bring in an extra paver and spreading machine rather than tie up an entire overhead and batch plant force.

The joint system in the new pavement is relatively simple. In all cases of overlay pavement, joints meet those in the old slab, regardless of spacing or direction. In the new pavement, simple dummy contraction-type joints occur every 15 feet, with a doweled contraction-joint at every fourth-space interval. Expansion joints are at 360-foot intervals. The longitudinal joints consist of keyed edges and doweled joints, with star lugs spaced at approximately 18-inch intervals to take the load transfer. Joints filled with JFR-type joint-filler, as a part of the contract, are covered initially with a small strip of plaster sand to prevent membrane concrete-curing material from penetrating the cracks. This is done since experiments conducted by both the U. S. Air Force and the Corps of Engineers have indicated that membrane-type concrete cures often reduce the bonding capacity of jet fuel resistant-type filler materials. It is vitally important, particularly in the case of blast velocities, that this material adhere to the concrete as tightly as possible.



A Koehring paver and Blaw-Knox spreader work on a lane which is being given an 8-inch concrete overlay. *U. S. Army, Corps of Engineers*

Minor Grading Done

The 50,000-cubic-yard excavation and grading job is one of the minor contract items, but nevertheless it was necessary to dig this material and place it in subgrades at relatively high density.

The dirt-loading fleet consisted of a Caterpillar DW-21 and five Caterpillar DW-10's, pushed by Caterpillar D8's. As the earth was picked up, brought in, and spread, it was bladed out in thin lifts by Caterpillar No. 12 motor graders and watered by several water-hauling units. American and Gebhard sheepsfoot rollers, pulled by crawler tractors, compacted the various lifts after the moisture was intimately blended and the material was laid out. Density checks, which were run daily, verified compaction results attained.

In a few hard spots, it was necessary to use LeTourneau and Rome rippers to loosen some of the borrow pit material. With the exception of a little difficulty in bringing the fine, alluvial soil to the proper compacted weight, the grading was almost routine. With expectations of continued good weather, some of the subgrade was completed a considerable distance ahead of paving. Rain later placed a little free water over these areas, but it was quickly removed by 2 and 3-inch Jaeger and Rex centrifugal pumps.

Cleanup of the old concrete slabs ahead of the overlay paving work was so carefully done that a force of 16 men was assigned to that crew. This work was never easy. In maintaining the old slabs under increasing wheel loads, it had often been necessary to fill pavement joints beyond the flush-line capacity of the cracks. The excess material thus placed had to be removed and the old slab made absolutely free of asphalt, fuel, grease, or other types of foreign matter which might interfere with the bonding of the new and old concrete.

The big labor crew used ordinary roof-scrapers to remove the excess joint material. Greasy spots and areas on the old slab which were covered by asphalt or other foreign matter were scrubbed clean with

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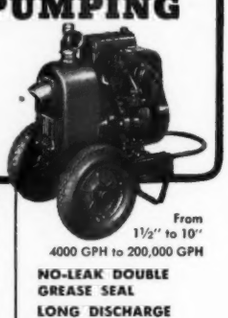

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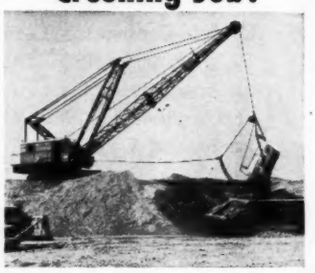

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an Oakite caustic stripper solution. Brooming was a continuous operation. Two Grace power brooms were on the job constantly. In fact, these machines, unlike similar ones on most construction jobs, worked practically all the time on each 8-hour shift.

For the preparation of subgrade on new areas where 16-inch concrete paving was designed, a Ferguson subgrade planer developed by Shovel Supply Co. of Dallas, was used in conjunction with a small Allis-Chalmers HD 9 tow tractor. A hydraulic lift on the planer made it easy to raise the machine after it had been dragged the length of a strip. Excess material that was brought up by its blade was then picked up and moved to other areas by a LeTourneau D-Roadster. As soon as the subgrade planer had finished work, the fresh area was rolled flat again by a Ferguson tandem compaction roller.

Two Paving Spreads Work

Two paving spreads were used: a main laying crew and a smaller standby crew with one paver, which brought up odd areas too short for the main crew to pave at high speed. Both Heltzel and Blaw-Knox steel forms were available on the job, totaling 3,600 linear feet for 8-inch forms, 1,500 feet for 7-inch forms, and 3,600 feet for 6-inch forms. To build 16-inch pavement, 7-inch forms were used on top of special 9-inch finished timbers. For 12-inch pavement, 6-inch forms were used with 6-inch timbers. For 8-inch pavement, the 8-inch forms were used alone.

The installation of forms was of particular interest since much of the form setting had to be done over areas already paved with concrete. Obviously, the driving of pins was a considerable problem. It became a compressor and pneumatic drill operation, with Gardener-Denver and Le Roi machines of 365 and 210-cfm capacity, respectively, often working side by side. Chicago Pneumatic Model 53 air guns with 1-inch steel and 1½-inch-diameter Timken and Joy bits drilled the holes.

The forms were then staked down and leveled. In spite of the frequent short-length paving runs, forms were set consistently at least 500 feet ahead of the pavers, and often at greater distances where paving runs permitted a longer construction spread.

Although longitudinal spacing of star lugs along the sides of the pour might have presented a problem too, T. L. James & Co. officials devised a clever scheme for installing these load-transfer devices. The method of holding the star lugs in forms was devised by Texas Construction Co., Dallas, Texas, and passed on to James & Co. by Texas Foundries, manufacturers of star lugs. In cases where the star lug fell within the end area occupied by steel forms, the forms were neat punched to take the connecting shank of half a star lug assembly. This connecting shank was inserted through the hole along with a solid wedge which protected it, leaving the effective half of the load-transfer device protruding into the concrete pour. In cases where the star lugs occupied an area covered by timbers, the timbers

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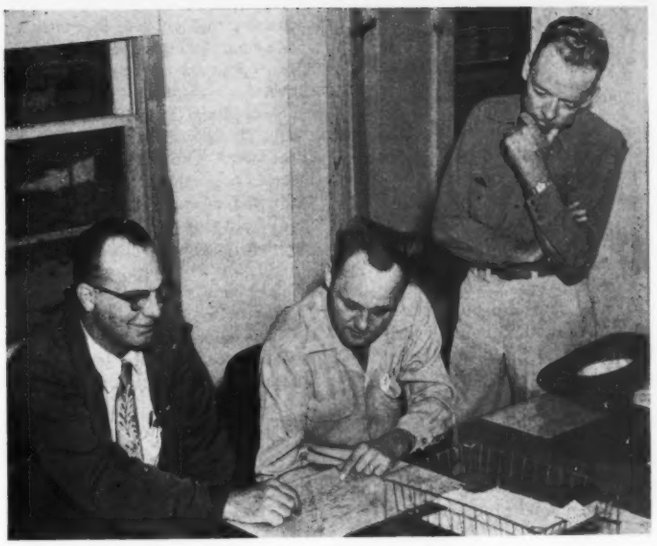

Conferring on part of the job specifications are, left to right, C. W. Wooden, assistant area engineer for the Corps of Engineers and, for T. L. James & Co., Robert Hill, project manager, and R. A. Womble, paving superintendent.
Ray Day Photo

B.F.Goodrich

Universal tires roll over jagged slag, can still be recapped!

THIS truck, part of the fleet of the McGraw Construction Company of Middletown, Ohio, dumps 55,000 pounds of slag fill for a new highway. The following truck must roll over this slag, often jagged and sharp-edged as broken glass. Many tires would be torn and cut to pieces after such rugged treatment.

But McGraw uses B. F. Goodrich Universal tires—tires that take such rough work so well, the company reports, they can actually be recapped! The Universal tread is specially compounded to resist rock cuts and bruises. Husky, wedge-shaped cleats defy snags, give positive traction in either direction.

And Universal tires are built with the patented B. F. Goodrich nylon shock shield. Layers of strong, elastic nylon cords under the tread stretch together to protect the cord body from tire-killing cuts and bruises. Result: Universal tires give you more hours of service, more recappable tires and hours of service per recap, increased bruise resistance and less danger of tread separation. You pay no more for the advantages of the exclusive nylon shock shield.

No wonder Paul J. Thiel of the McGraw Purchasing Department says: "We use B. F. Goodrich tires 100%." There's a B. F. Goodrich tire that saves money on all types of off-the-road work. See the complete line at your retailer's store. The address is listed under Tires in the Yellow Pages of your phone book. Or mail the coupon below.

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Airbase Paving Allows Heavier Wheel Loads

(Continued from preceding page)

were neatly bored out to take the various assemblies in the same manner.

In stripping the forms, a system was worked out to move them directly back without being damaged. An Allis-Chalmers HD-9 tractor and a front-end loader aided in the operation and also pulled the form pins. This method worked well; the forms were stripped cleanly without any damage and without introductory stresses from levering action in the concrete.

Transverse joints, particularly expansion joints calling for the use of star lugs and redwood, were put up by conventional prefabbed methods. The expansion joint assemblies, with the star lugs installed, were made in a central yard. These assemblies were then hauled to the field and staked down at the proper locations.

On the main paving spread, two Koehring 34-E Twinbatch pavers were used, working side by side in such a manner that the paver nearest the forms dropped its concrete on the far side of the pour. The outer paver then dropped its concrete on the side nearest the two machines. This method of setting up the pavers seemed to operate much better than having two pavers in tandem or pavers on either side of the lane.

After being proportioned at the project batch plant on Barksdale AFB, the 1.4-cubic-yard batches were hauled dry, two batches to a truck, by a fleet of 22 Ford F-6's. The dry batches were dumped to the Koehring paver skips, and mixing water, hauled from a central supply on the base by water tankers, was added. Mixing time was 60 seconds. The batches were dumped out on the grade just ahead of the Blaw-Knox concrete spreader, which distributed the paving material evenly between the forms. Mounted directly on the back of the spreader machine frame were a series of 10 electric Viber vibrators, operating at from 10,000 to 12,000 impulses per minute. These machines did an excellent and prompt job of consolidating the pavement material as the spreader moved down the line behind the pavers.

On 12 and 16-inch concrete paving, a single Blaw-Knox finisher was used behind the spreading machine. On 8-inch pavement, however, two Blaw-Knox finishers were put in the paving lineup so that both pavers could operate almost at capacity while finishing kept up with their output.

Following the one or two Blaw-Knox finishers was a Koehring longitudinal-float finisher and a Flex-Plane spray rig. The 12½-foot joint in the center of each pavement slab was formed by a circular knife mounted behind the second finishing machine. This joint, like all transverse contraction joints, was formed by cutting a small groove and inserting beveled-steel form strips in it for a short time. When the concrete had set up sufficiently, the strips were removed, and the edges finished with edging tools. These strips were usually placed and removed from bridges, although the Flex-Plane machine was also used for that purpose in addition to its prime function of applying the Hunt Process clear-curing membrane.

Some hand finishing was necessary. This consisted of long-handled float work and some straightedge work. A final pulled-finish, made with a bull belt, was applied by a pull from two cement finishers. The finished pavement surface is smooth in relation to general grade, but its surface texture is sufficiently rough to give plane wheels good traction.

Just before applying the curing material, each formed joint, in most cases with the metal strip still in place, was covered by a small ribbon of mortar sand applied with a sprinkling can. This sand ribbon was designed to prevent infiltration of the membrane curing solution into the cracks. Later, after the slabs were completed and the steel form strips removed, this mortar sand was blown away by blasts of compressed air just before the JFR joint filler material was applied.

The work of the standby crew was very similar to the paving done by the main organization. The third paver was also a Koehring 34-E Twinbatch, and the finishing machine was also a Blaw-Knox. On this spread, however, three gas-driven vibrators were used manually to consolidate the concrete, and a slightly greater amount of hand finishing was done behind the machines. It was necessary on both main and standby paving operations to keep the old concrete pavement moist for several days prior to the placement of new concrete, so that the new material would bond. In spite of the dearth of good, long runs, some fair paving averages were made. On the peak day, 1,630 1.4-yard concrete batches were mixed and placed in eight hours. Production on the other days was as close to that peak as

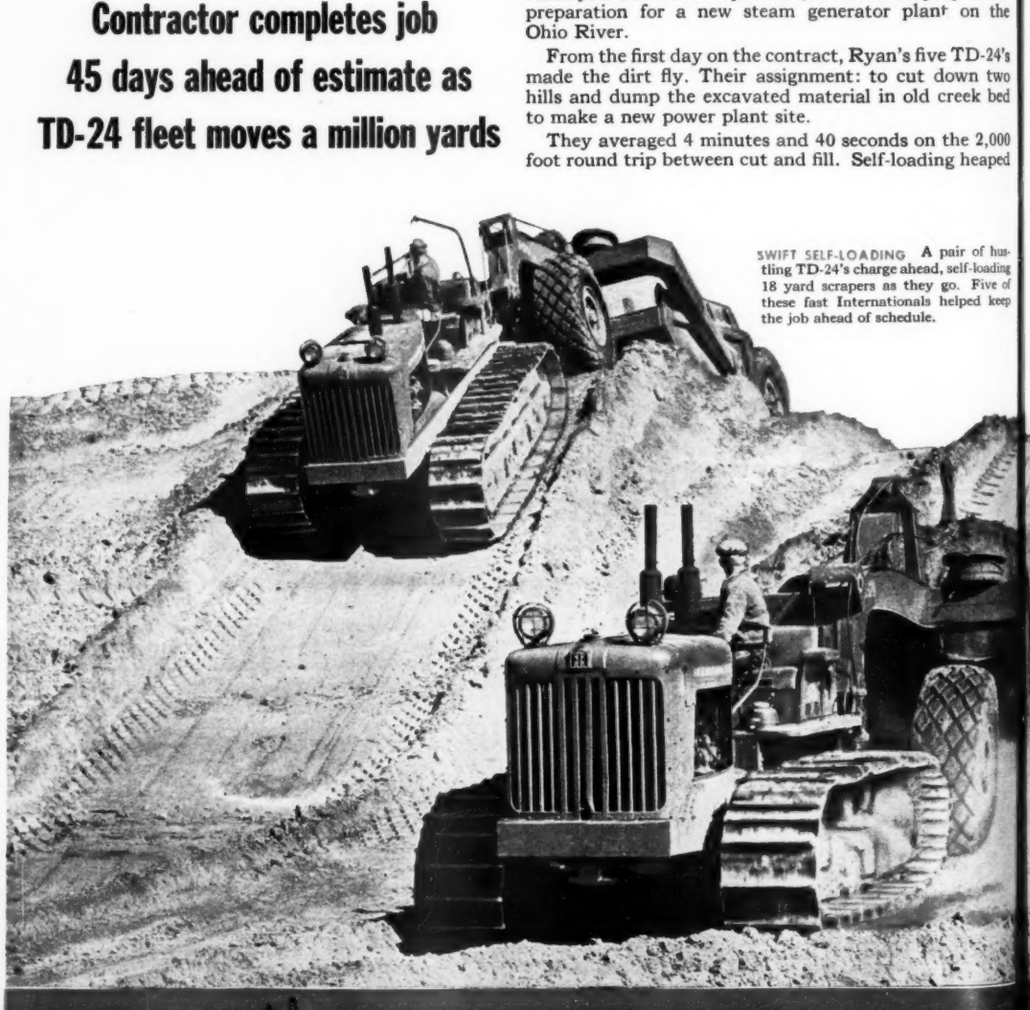
"Big Red"

Contractor completes job 45 days ahead of estimate as TD-24 fleet moves a million yards

Ryan Construction Company, Evansville, Indiana, took on a big job when they contracted to move a million cubic yards of dirt and place 35,000 tons of riprap in site preparation for a new steam generator plant on the Ohio River.

From the first day on the contract, Ryan's five TD-24's made the dirt fly. Their assignment: to cut down two hills and dump the excavated material in old creek bed to make a new power plant site.

They averaged 4 minutes and 40 seconds on the 2,000 foot round trip between cut and fill. Self-loading heaped



SWIFT SELF-LOADING A pair of hustling TD-24's charge ahead, self-loading 18 yard scrapers as they go. Five of these fast Internationals helped keep the job ahead of schedule.

the length of paving lanes allowed.

Batch Plant on Field

Batch plant facilities for proportioning the concrete were located on Barksdale Field property. Both the aggregate and bulk-cement subdivisions of the plant were located directly on a railroad spur so that all concrete materials could be shipped in by railroad car. The aggregate plant consisted of a pair of 100-ton Blaw-Knox aggregate bins, with a manual arrangement for weighing the material. Cement facilities consisted of two Blaw-Knox cement bins with silos, having a total capacity of 850 barrels. These cement storage facilities were equipped with feeder screws, reaching under the railroad tracks, and bucket elevators for raising material to the plant. Lone Star, Ideal, and Trinity bulk-cement were used.

Concrete aggregates and sand came from Merriweather Sand & Gravel Co., at Lewisville, Ark. Two sizes of rock aggregates and one size of sand were used. In the manufacturing process, a sufficient amount of No. 100 mesh fines were removed to cause a deficiency of that material, so 100-mesh fines were added at the batch-plant, and the material was batched through one of the bins.

Railroad carloads of material were unloaded at the batch plant by a 1-yard Lima, a No. 6 Northwest 1½-yard machine, and in some cases by a Lima 401 crane which did standby duty.

The dry batches of material were proportioned according to Corps of Engineers design specifications and dumped two batches per truck to the fleet of waiting trucks. Of the 22-unit fleet, 20 were Ford F6's. The fleet was all a company-owned investment.

The job was well organized on the whole, and good liaison was maintained between the contractor, the Corps of Engineers, and the U. S. Air Force. For example, no objection was raised when the center lane of one of the new 16-inch concrete slabs was placed first so that it could be used as a haul road for batch trucks moving into other areas. The Air Force did not interfer with the contractor's operations at all.

Completion of the big rehabilitation job on this pleasant basis gives Barksdale the extra plane-parking facility it needs to function as part of SAC's over-all strength.

Barksdale an Old Field

Barksdale Field, one of the largest of its kind in America, is situated about five miles east of Shreveport, La., on U. S. 71. It is a key station of Strategic Air Command, headquarters of the Second Air Force, and home of the 301st and 376th Bombardment Wings. Both Wings are global bombardment organizations. Presently equipped with Boeing B-29 aircraft, they are expecting to receive newer equipment soon.

The field consists of 21,705 acres of land purchased by Shreveport for $1,650,000 and presented as a gift to the United States government, which officially accepted it in November, 1930. It is fertile river-bottom farmland with extensive wooded tracts scattered over its eastern portion, and it contains several small streams stocked with game fish for the use of personnel stationed at the field.

The base property is beautifully landscaped. A boulevard runs from the main gate to headquarters, a quarter mile away, and the boulevard island is bordered by trees. Live oaks border the outer edge of the drive and form picturesque frames for the quarters. On the base are 231 sets of quarters of stucco construction in early French architecture, and 692 additional new permanent-quarter units.

Since its inception, Barksdale has served a number of purposes. It has been an operational training unit, a replacement center, a medium bombardment school, and a very heavy bombardment school, as well as headquarters for the training command.

Personnel

Second Air Force headquarters is under the command of Maj. Gen. Frank A. Armstrong, Jr. Brig. Gen. Frederic E. Glantzberg is commander of the Fourth Air Division, also located at Barksdale. Barksdale's base commander is Col. Samuel M. Smith.

For the Corps of Engineers, Col. Thomas J. Hayes, district engineer of the Little Rock, Ark., office, had general charge. Lt. Col. Arthur W. Starkey was Col. Hayes' executive officer, and Lt. Col. Joe A. Clema was area engineer and liaison officer in charge of field operations. He was assisted by Charles W. Wooden and George T. Andrews. W. R. Gray was project engineer, and J. K. Cowger, paving engineer.

For T. L. James & Co., Robert Hill was project manager, assisted by R. A. Womble, superintendent; C. L. Speed, in charge of grading; Ben Wilson, master mechanic; and E. R. Franklin, paving foreman. Roy Cashion was in charge of concrete finishing and curing. Robert Parnell was office manager.

TD 24

Rolls for Ryan

scrapers, the Big Red fleet moved tremendous yardages every day—kept doing it even in rain and mud, the Ryan people report.

TD-24's are the fastest and most powerful crawlers on the market. That's why "Big Red" performance is paying off not only for Ryan but for contractors across the country who need big crawler power to get tough jobs done on time.

And you can't beat the service provided by your nearby International Industrial Distributor. His trained servicemen, complete stocks of parts and up-to-date shop facilities are available to you anywhere, anytime to keep your equipment in production.

He and the famous line of IH crawlers he sells are willing and able to help you put your contract on a paying basis.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

POWER STEERING WITH FULL LOADS mean faster cycles, higher daily production. Because "Big Red" steers with full power on both tracks, it can maneuver with the same heavy loads that can be pulled on the straightaway.

WATCHING BIG RED ROLL Ryan Construction men keep close tabs on the performance of their five TD-24's. Cycles are clocked for half an hour every morning and afternoon. Left to right: Guy Tilley, Job Superintendent, Tom Vickers, Job Foreman, and Virgil Scales, Superintendent.

INTERNATIONAL HARVESTER

INTERNATIONAL

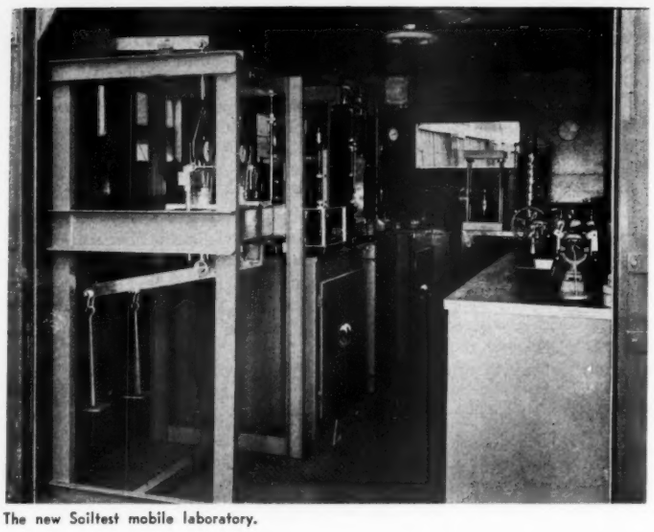
POWER THAT PAYS

Mobile Soils Lab

■ A new truck-mounted mobile soils testing laboratory has been announced by Soiltest, Inc., 4520 W. North Ave., Chicago 39, Ill. This mobile laboratory is designed for use in field testing of soils in the construction of dams, levees, roads, airfields, pipe lines, and similar structures.

The laboratory is a self contained unit, outfitted in a steel van-type body. Electrical power is supplied through an automatically starting electric plant, and distilled water and wash water tanks are built into the laboratory body. An air compressor and receiver are also mounted on the unit.

Benches, storage cabinets, and working spaces are arranged to allow three technicians to work in the laboratory.



The new Soiltest mobile laboratory.

The mobile laboratory is equipped for standard soil tests for: grain-size, liquid limit, plastic limit, shrinkage limit, specific gravity, compaction, field density, California bearing ratio, unconfined compression, load bearing, and permeability. Special units can be equipped for consolidation and triaxial testing of soils or for tests of asphalt, bituminous materials, and concrete.

For further information write to the company, or use the Request Card at page 18. Circle No. 734.

Wider Aluminum Sheets

■ Corrugated aluminum sheets 48 inches wide are now available from the Reynolds Metals Co., 2000 S. Ninth St., Louisville, Ky. The company points out that these sheets require fewer side laps so that there is a considerable saving in metal. Wider roofing and siding sheets are available in .019-inch and .024-inch gage. The sheets are embossed for greater beauty and rigidity, and for better diffusion of reflected light and the reduction surface scratches.

Industrial corrugated-aluminum sheets are available in .032-inch gage, and come in lengths ranging from 5 to 12 feet. Special lengths may be cut to order. The material's weight is 56 pounds per 100 square feet of formed sheet.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 761.

Barber-Greene Film

"A Profit for Everyone", the latest in the series of Barber-Greene 16mm sound-color motion pictures, describes all asphalt drying, gradation, and mixing equipment which goes to make up its Model 840 asphalt plant line.

Illustrations are given of plant sets that are combined to produce any type of hot or cold bituminous mix, including the highest type mixes requiring screening and separation of aggregate sizes after drying. One sequence is devoted to the transportation and erection of the plant. Job scenes taken in various locations all over the world illustrate various plant components. The film shows how availability of portable low-cost asphalt plants of this type have brought modern asphalt paving to the remotest parts of the world and to parts of this country where previously only less satisfactory methods were possible.

The 26-minute film also comes in a Spanish language version, and both may be obtained on loan without charge by writing Wayne D. Adamson, Jr., Advertising Manager, Barber-Greene Co., Aurora, Ill.

This contractor was in for a happy surprise

A St. Louis contractor got the job of resurfacing the roadbed of a bridge. To do this he had to break out all the old concrete in which was imbedded thousands of feet of reinforcing rod.

Based on earlier experience with other makes, this contractor estimated that he would require 2000 moil points. He asked for bids and ran tests on the five makes under consideration.

Cleco 1⅛" x 6" x 14" UC Hi-Duty Moil Points proved superior to all other points tested. In fact, they proved so good the contractor decided he would require only 300 moil points instead of the 2000 originally estimated.

If you would like to save money like this—be sure to test Cleco Hi-Duty Moil Points before you make another order. Call your nearest Cleco dealer, or write us for his name.

CLECO AIR TOOLS — PNEUMATIC DALLETT ACCESSORIES

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3948

HUNT PROCESS
CONCRETE CURING COMPOUNDS
NOW AVAILABLE IN SOUTHEAST
Write for complete information
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Device for Shop Data

■ You can dial the answers to questions that arise in every-day shop work with a new pocket calculator made by Goodmark, Inc., 21 E. Second St., Dayton 1, Ohio. The calculator is made up of a number of disks which, when revolved, supply the desired information through little windows.

One side of Derck's Gauge Dial gives the sizes of lettered and numbered drills in decimals. One disk gives taper-pins and reamer sizes, while another gives double depth of U. S. threads. Other information provided includes divisions of circles, giving chords and included angles of divisions, distances across flats and corners of squares, and distances across flats and corners of hexagons.

The reverse side of the device has a machine-screw table, and national fine and coarse thread tables, giving threads per inch, size of tap drill, size of body drill, and outer diameter of the screw. There are four disks giving decimal equivalents, pipe tap sizes, tapers and angles, and Woodruff key sizes.

The pocket-size device is only 5 inches in diameter, ⅛ inch thick, and is made of treated press-board.

For further information write to the manufacturer, or use the Request Card at page 18. Circle No. 718.

Flow Valve Actuators

■ Valve actuators for the automatic operation of gate, plug, diaphragm, butterfly, pulp stock, and other flow control valves are available in package units for installation directly on the valve in service. The Ledeen valve actuators are mounted without any outside supports. Operated by air, gas, oil, water, or steam, they feature power operation under direct or remote control.

The line is illustrated and technically described in a bulletin which includes actuator selection instructions and tables.

To obtain this literature write to the Ledeen Mfg. Co., 1600 S. San Pedro St., Los Angeles 15, Calif., and request Bulletin 3000, or use the Request Card which is bound in at page 18. Circle No. 707.

Dump Body for Tandem Increases Legal Load

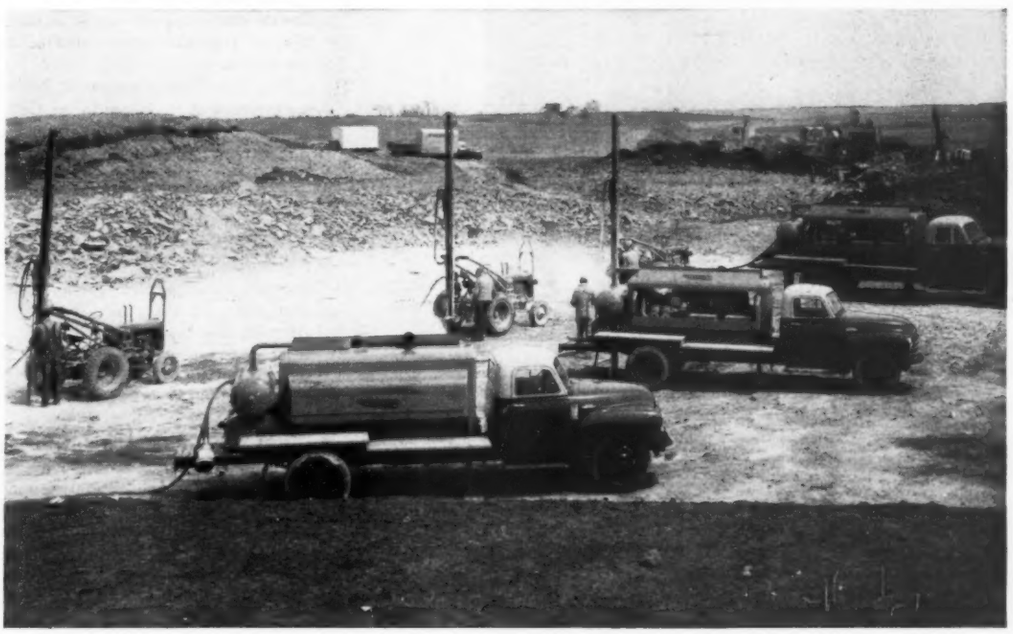
■ A 9½-cubic-yard dump body is now available, factory-installed, for the heavy-duty Reo Model F-226M tandem truck. Built by the Heil Co. of Milwaukee, Wis., the new dump body is designed so that about 14,000 pounds of payload rest on the front end and 32,000 pounds on the rear axle.

In states which have a 32,000 pound tandem-axle law, a conventional F-226M can haul about 8 cubic yards of payload legally. The new dump body has increased payload capacity to 9½ yards while remaining within legal limits, the manufacturer reports.

For further information write Reo Motors, Inc., Lansing 20, Mich., or use the Request Card at page 18. Circle No. 754.

A special Heil dump body enables the Reo Model F-226M tandem truck to carry a 9½-cubic-yard legal payload.

Jaeger-Air now speeds operation



the fastest drilling team on wheels

Motorized for rapid movement. Each drill powered with 365 cu. ft. of air for top speed drilling and blowing

To work his 20 quarries, widely spread over five counties, Perry Jones, Carbondale, Kansas contractor and quarryman, devised this motorized fleet. The Jaeger "new standard" 365 ft. compressors are on Model 6500 Chevrolet trucks. The Thor 4" wagon drills, with enough mast for 12 ft. steel change, are on Case tractors.

Each compressor, with its drill, is a self-sufficient mobile unit, permitting the most flexible use of the equipment.

Rock ledges vary in depth up to 23 ft. The additional air delivered by the 365 ft. Jaeger compressors makes it possible to hold full 90 to 100 lbs. pressure at the tools for maximum efficiency in both the drilling and the hard blowing required. The 315 ft. compressors, previously used, could not maintain this full pressure.

Other Jaeger "new standard" capacities — 75 - 125 - 185 - 250 - 600 cfm — offer comparable opportunities to get greater production without increasing costs. See your Jaeger distributor, or send for Catalog JC-1.

"I am now operating my seventh consecutive Jaeger 'Air Plus' Compressor. This speaks for itself as to my opinion of the design and superior performance of these machines."

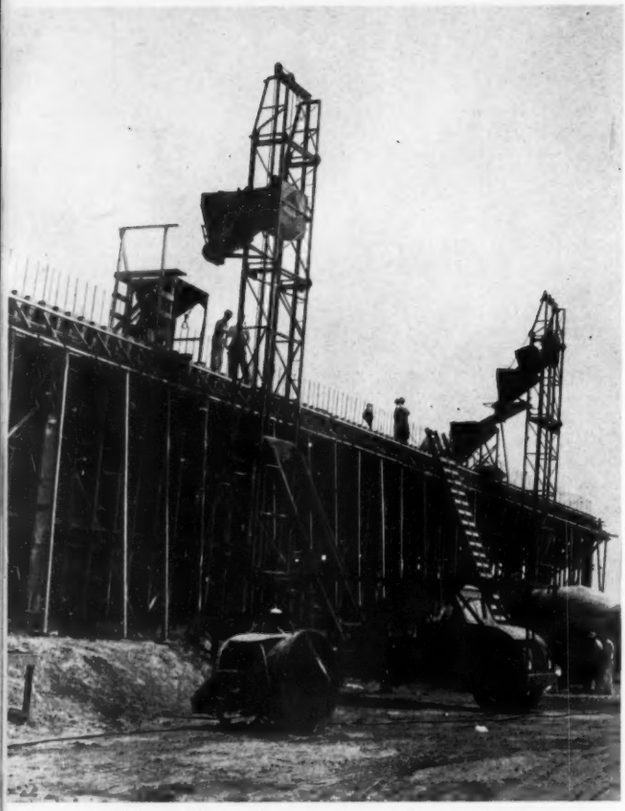
Perry Jones

THE JAEGER MACHINE COMPANY

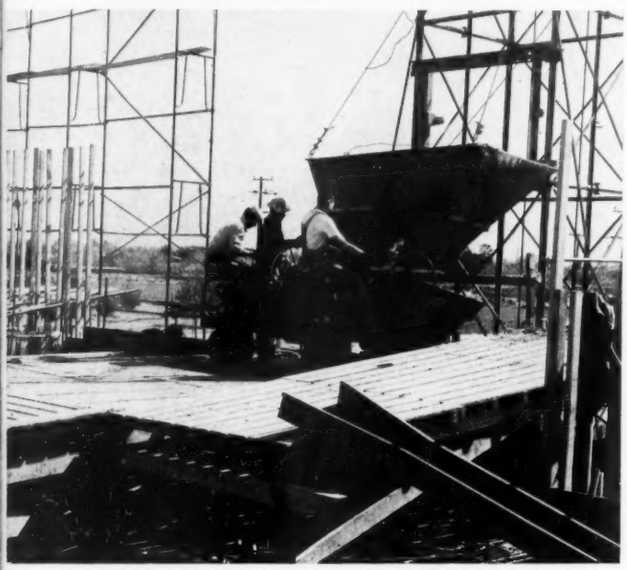
701 Dublin Avenue, Columbus 16, Ohio

TRACTOR LOADERS • PUMPS • CONCRETE MIXERS • TRUCK MIXERS • PAVING MACHINES

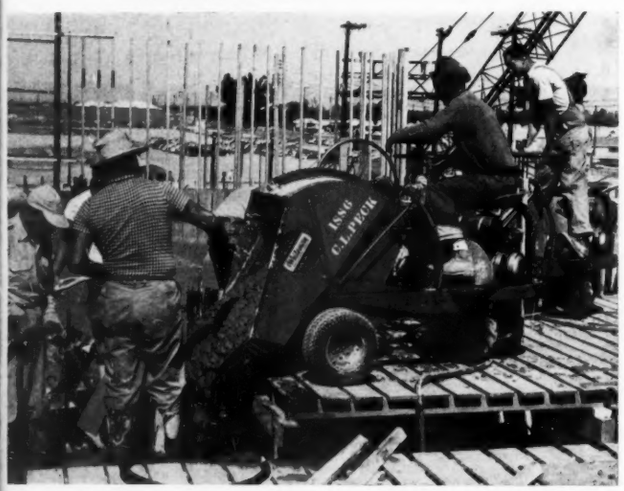
Big Brewery Constructed On



Wagner Mixermobile towers raise and dump transit-mix concrete into a transfer bucket on one of the lower pours.



Whiteman power buggies load simultaneously, then haul concrete over timber runways to the pour.



Concrete is dumped over the edge of the runway and then vibrated by a Master machine.

CUSTOM FEATURES, which go into the making of a beer like Budweiser, also go into the construction of its breweries.

Nowhere is that statement better exemplified than in southern California's San Fernando Valley on the outskirts of Los Angeles, where Anheuser-Busch of St. Louis, Mo., is building a new west coast home for Budweiser. Designed by Holmes & Narver, Inc., of Los Angeles, the new facility will bring Budweiser brewing to the Pacific Coast for the first time. Peck-Cahill Co. of Los Angeles has a joint-venture contract on the first $15,000,000 unit of what ultimately will be a three-unit $50,000,000 plant.

Construction Problems

Construction problems are many. Floor loads as high as 300 pounds per square foot had to be designed for some parts of the plant. This created interesting foundation problems, since the brewery sets an unlimited overburden in the San Fernando Valley floor. Some of the thin reinforced-concrete walls called for 6 and 8-inch thickness in pour heights as great as 27 feet. An interesting prestressing job on the cellars, which was done to minimize any possible shrinkage-crack effect, was another important feature of the work.

The fact that practically all components of the new brewery were so dissimilar called for custom-made formwork, without allowing for the conventional re-use of forms. In most cases, plywood facing on both sides of a wall was necessary. These and other problems which will be treated later have combined to make the new Budweiser home one of the most interesting current building jobs on the west coast.

In order to achieve flexibility, simplicity, and an opportunity for rapid expansion in production control, Holmes & Narver laid out the new plant in the conventional style common to many western industrial plants. Except for the multi-story brewhouse, grain bins, and cellars, the plant is a single-story affair. Brewhouse and grain-bin areas, however, with the exceptionally heavy floor loads under their many stories, called for special foundations to carry the weight.

The brewery makes use of the same basic components as Budweiser's brewing facilities in St. Louis, Mo., and Newark, N. J. Buildings in the San Fernando plant will include a brewhouse, grain storage bins, cellars, a stockhouse, office, power plant, racking room, bottle shop, operating warehouse, and seasonal warehouse. For routine power, the brewery will use electricity generated by Southern California Edison Co., but there will be a standby plant available in cases of emergency.

Railroad tracks will connect the brewery to the Southern Pacific Railroad, and modern truck ports will handle the truck shipping. The shipping warehouse is a well-integrated center, designed with emphasis on the delivering and receiving of loads. The warehouse will provide for end or side loading of trucks in order to eliminate the necessity of extra handling by lift machines.

The plant is a reinforced-concrete structure throughout, and when the first unit is completed, will have a capacity of 960,000 barrels of beer per year. It will be a definite addition to the industrial assets of the greater Los Angeles area on the west coast. Plans call for finished landscaping, fully in keeping with the natural beauty of San Fernando Valley.

Drilled-In-Place Foundations

An interesting adaptation of drilled-in-place caissons formed the major portion of the foundation planning. All told, plans called for 850 drilled-in-place friction piles with diameters from 21 to 24 inches. Also included in the plans were 600

By CHARLES A. McMAHON, Superintendent, Peck-Cahill Co.

With RAY DAY

On Drilled-In-Place Piles

Foundation and concrete placement problems are overcome in building California plant

belled foundation caissons, with 24 to 30-inch round shafts, and 2½ to 8½-foot diameter bells. This type of foundation was specified because of its low cost, along with a desirable rate of speed to keep ahead of the other work in the early stages of the job.

This work was sublet to George F. Casey Co. of Los Angeles, foundation specialist with long experience in this kind of work. Casey's crews were not dismayed when some of the outer cluster caissons had to be battered 1 on 3. Their equipment spread consisted of machines sufficiently versatile to drill either a straight or battered hole.

Foundation Drilling

The foundation drilling equipment consisted of Calweld earth boring drills, supplied in whatever numbers were necessary. The greatest number of machines on the job at any one time was six. A sufficient number of drill buckets of various diameters was maintained on the project, so that the rigs could move around to various locations to fit in with the over-all schedule of foundation construction.

The major portion of the drilled-in-place foundation holes occurred as clusters, with holes about 6 feet apart and averaging about 50 feet deep. In spite of the fact that these holes were drilled relatively close together, however, they went down without disturbing the adjacent earth. The Calweld drill is a bucket-type rig of standard manufacture, with adequate power and a gear-driven table which actuates its square kelly-bar attached to the drilling bucket. When a bucket is filled, the operator brings it to the top of the ground, where it can be dumped.

Excellent progress was made on this phase of the work. Generally speaking, each rig accounted for four completed 50-foot holes, including the belled portion, in an 8-hour shift. On holes battered 1 on 3, the rigs accounted for as high as three units per shift, complete with the belled footing.

One of the factors which made foundation drilling at high speed practical was a concrete placing method designed and developed by the author. The scheme eliminates once and for all the necessity for excessive concrete-drop when the caissons are filled. Basically, the scheme utilizes a telescoping concrete tremie, which trains the concrete, under control, to the bottom of the hole. At the same time, the bottom level of the tremie is raised as the poured concrete mounts toward ground surface.

Actually, this tremie removes the last uncertainty of the drilled-in-place type of foundation. The special tremie is made up of 7 to 10-inch diameter pipe, consisting of telescoping 11-foot sections. The tremie head is equipped with pipe sleeves, which pass the raising and lowering cables and prevent them from becoming fouled with concrete. The tremie assembly is supported from an A-frame, carried on a winch truck. The scheme works rapidly and simply. The winch truck backs over a hole, lowers the telescoping section to place the bottom of the pipe 6 feet above the bottom of the hole, and the operator then signals that he is ready for concrete.

Ready-Mix Concrete

Truck mixers from Consolidated Rock Products Co., Blue Diamond Corp., and Arrow Rock Corp. then deliver the fresh concrete to the tremie head, which trains it down to the point of pour. The concrete builds up rapidly, of course. As its level rises, the winch-truck operator simply raises the tremie pipe at a rate commensurate with the rate of concrete placement. When the top of the ground is reached, concrete is finished off directly from the truck mixer, and dowel steel is

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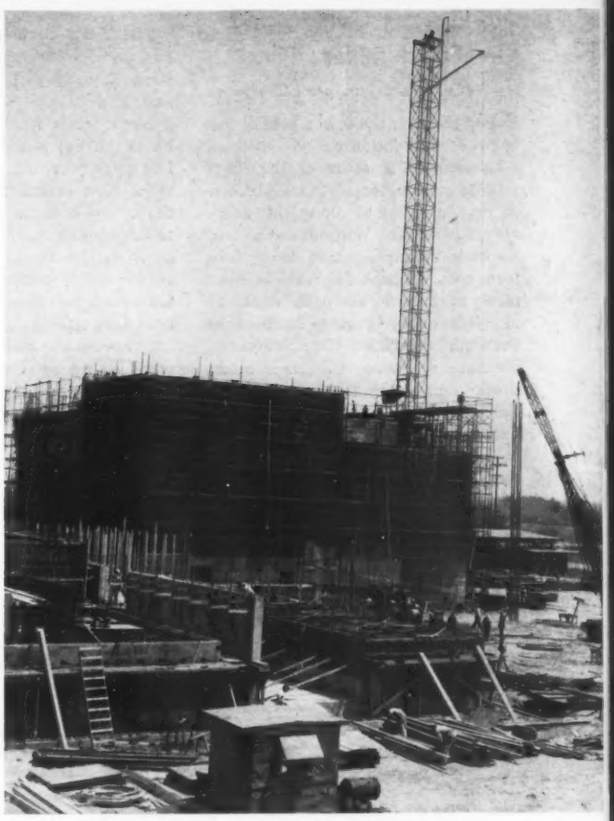


Much of the high-pour concrete was hoisted by a 2-drum electric-driven American hoist and a 185-foot steel tower.

Workmen on a Calweld earth drill dump a bucket of material as they bore one of the 850 drilled-in-place caissons.

Concrete is poured into one of the drilled holes through a telescoping concrete tremie.

Big Brewery Constructed On Drilled-In-Place Piles

(Continued from preceding page)

placed to catch the lower part of the brewery foundation.

In excavating some of the deep pits, it was necessary to dig down as deep as 25 feet along the completed caissons. Without exception, the concrete surface was dense, free from rock pockets, the material was nicely textured, and the concrete showed every surface indication that an excellent distribution of concrete particles had been made throughout the shaft. It is expected that this fast, foolproof tremie will influence the selection of drilled-in-place caissons on other jobs, since it eliminates uncertainty about concrete workmanship in places not normally seen.

Precise Concrete Work

The 35,000-cubic-yard reinforced-concrete job in the project called for some unusually precise formwork and, in some cases, large pours. In general, walls were relatively thin, but even so, pours as high as 27 feet often were required. Concrete work was further complicated by the fact that plant components differed enough to prevent, in large part, the re-use of forms. It was an expensive custom-made piece of formwork, but brewery construction is of this type.

Power saws and lumber stacks were set up as centrally located as possible to the main bulk of forming. At the central carpenter shop, lumber was cut to proper dimension and, if possible, nailed together to make the finished forms prior to their field installation. In many cases, however, carpenters had to work on forms at the places in which they were set. Many forms called for plywood facing both inside and outside the walls.

Formwork consisted generally of plywood in ⅝ and ¾-inch thickness, nailed to 2 x 4 studs on 12 to 16-inch centers. These forms were then secured in place by high-tensile C. P. Concrete form bolts. The form bolts were fastened in conventional manner through outside wales placed snug against the form studs. On the higher forms, such as those around the multi-story brewhouse, a system of Safway steel scaffolds was set up to make carpentry work faster and safer.

A wide variety of concrete placing methods are being employed. In some of the low parts of the foundations, concrete is placed directly from truck mixers, which base out of the Consolidated Rock Products Co.'s commercial batching plant at Roscoe, Calif. In other cases, a 1-yard Gar-Bro transfer bucket, swung from an American crane, is used. Much of the high concrete on the brewhouse is hoisted by a 2-drum electric-driven American hoist and a 185-foot steel tower, manufactured in Los Angeles by Steelform Contracting Co.

On some of the lower pours, Mixermobile towers are used successfully to raise the concrete. On all the large slabs, the concrete is dumped to a transfer hopper and carried to the point of placement by Whiteman power buggies. As many as eight of these machines and three transfer hoppers have been used on one pour. The machines travel on prefabbed 6 x 6-foot timber runways, and after placement, the fresh concrete is vibrated by electric Master machines. Water curing is used to a great extent, particularly in the more critical areas. The roof slabs are cured by the Hunt Process, using a membrane curing compound.

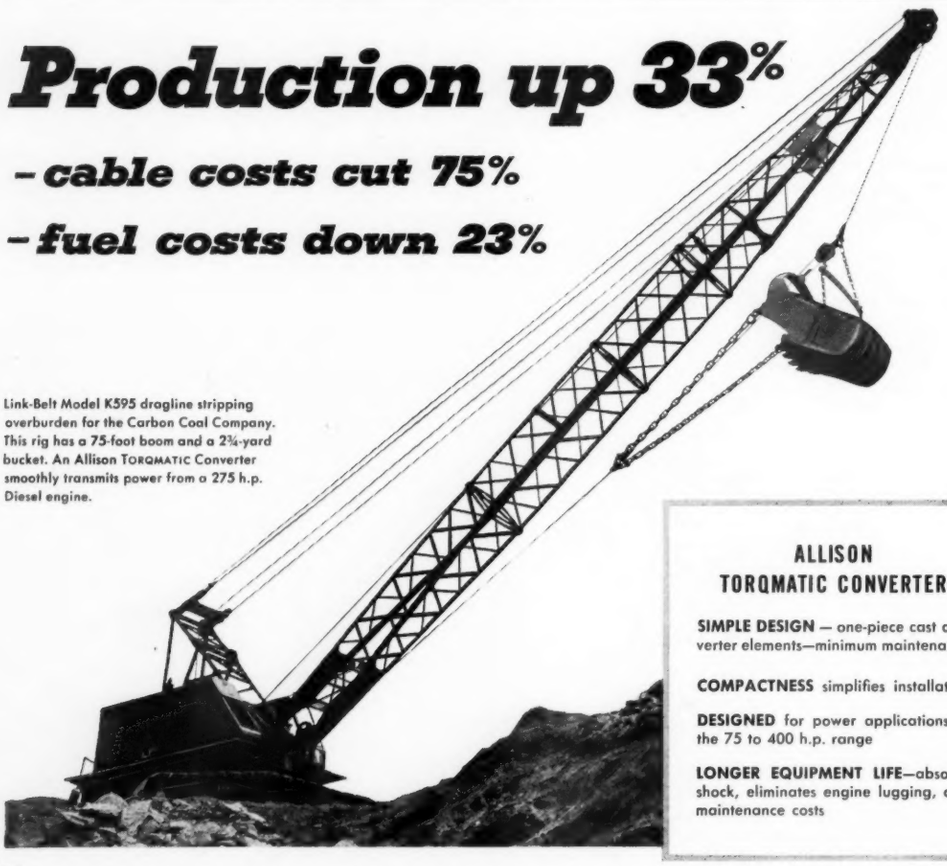
Cellars Prestressed

In order to minimize possible damage from shrinkage cracks later on, the cellars are being prestressed by the Freyssinet method to hold the concrete under a partial stress. No use has been made of the prestressing, however, to save on conventional concrete quantities, since the purpose is for shrinkage control.

Standard Freyssinet methods and equipment are being used with cones, jacks, and cables with female fittings. Each prestressing cable contains ten high-tensile steel wires (250,000 psi) of 0.239-inch diameter, which are tensioned to an ultimate pull of 50,000 pounds per wire. The initial tensioning takes place when the concrete has reached about 2,500 psi compressive strength. At that time, about 30 per cent of the ultimate prestress is applied, and the cones are temporarily set in place. Later, when the concrete has achieved its 4,000-pound strength, the final prestress pull is applied, the wires are cut off outside the cones, and the cone recesses are grouted. Peck-Cahill is doing the prestressing with its own forces, the first several pulls supervised by a Freyssinet engineer.

The entire job is moving ahead rapidly, and early in 1954 Budweiser will begin to flow from its west-coast home to whoever prefers the choicest product of the brewer's art.

Production up 33%
–cable costs cut 75%
–fuel costs down 23%



Link-Belt Model K595 dragline stripping overburden for the Carbon Coal Company. This rig has a 75-foot boom and a 2¼-yard bucket. An Allison TORQMATIC Converter smoothly transmits power from a 275 h.p. Diesel engine.

ALLISON TORQMATIC CONVERTER

SIMPLE DESIGN — one-piece cast converter elements—minimum maintenance

COMPACTNESS simplifies installation

DESIGNED for power applications in the 75 to 400 h.p. range

LONGER EQUIPMENT LIFE—absorbs shock, eliminates engine lugging, cuts maintenance costs

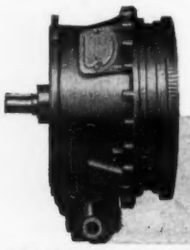
Here's another operator who's boosting production and cutting costs with Allison TORQMATIC DRIVES: The Carbon Coal Company operates two Link-Belt draglines, strip-mining coal near Grove City, Pa. The units are nearly identical—one has an Allison TORQMATIC Converter, the other is direct-driven—but there's a big difference in operating costs and production.

The Allison Converter absorbs shock loads so dragline cable on the TORQMATIC-equipped unit lasts four times as long, *saving $2160 a year on cable alone*, a reduction of 75%.

The TORQMATIC-equipped unit strips a 60x40x25 foot "lift" of overburden in 24 hours against 32 hours for the direct-driven unit, a 33% increase in production. A comparison of daily fuel records shows the friction drive unit consumes 130 gallons while the Converter-equipped unit uses only 100 gallons, a cut in fuel costs of 23%.

The TORQMATIC-equipped unit has rolled up such an impressive performance record that this operator intends to specify TORQMATIC DRIVES in all his new heavy-duty equipment. You, too, can cut your costs by specifying Allison TORQMATIC DRIVES the next time you buy. Ask your equipment dealer, manufacturer or write:

ALLISON DIVISION OF GENERAL MOTORS
Box 894CC, Indianapolis 6, Indiana



Allison **TORQMATIC DRIVES**

GM GENERAL MOTORS

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES * TRUCKS * TRACTORS * SCRAPERS * SHOVELS * DRILLING RIGS

WON'T QUIT
or cause time out

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

The Hayward Company
32-36 Dey Street
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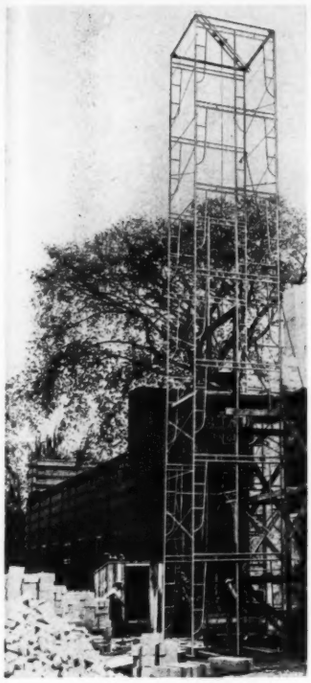
CONTRACTORS AND ENGINEERS



Material Hoist Tower

■ A new material-hoisting tower is announced by Bil-Jax, Inc., Archbold, Ohio. The tower assembles with standard parts and is made for loads up to 4,000 pounds and for heights up to 100 feet. Open-stock design makes it possible to erect the tower to any desired height or to add sections to extend the height of the tower. These sections may also be used for other scaffolding purposes when the tower is not needed.

Component parts include the cat head, the top frame section, side panels, base section, platform frame, and braces. Optional equipment includes such items as a power unit, steel cable, cable guides, gates, cages, and brakes.

For further information write to the company, or use the Request Card at page 18. Circle No. 763.

Allis-Chalmers Terminal

A modern one-story terminal warehouse and office building in Madison, Wis., is under construction for Allis-Chalmers Mfg. Co.

Designed by John J. Flad & Associates, architects and engineers in Madison, the building will be 200 feet in length and 175 feet in depth. Shipping facilities include truck and rail. There will be ample parking space for employees and visitors.

Reflective Road Signs Made of Aluminum

■ A new line of traffic signs made of hard aluminum alloys and reflective sheeting is announced by the Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn. According to the manufacturer, the Scotchlite reflective sheeting used makes the shape and color of the sign visible at night more than a quarter mile away. The sheeting is supplied in standard traffic colors which conform to the Uniform Manual of Traffic Control Devices.

The new line includes 42 different traffic signs, ranging from regulatory to warning and guide signs.

The manufacturer points out that the spring and temper of the aluminum resists and reduces vandalism that destroys signs. The signs are rust-proof and therefore need no

painting. The smooth-surfaced reflective material is easy to clean.

The aluminum alloy used is 61S-T6 in an .081 gage.

For further information write to the company, or use the Request Card at page 18. Circle No. 788.

BRAB Meeting Published

Proceedings on the conference "Housing and Building in Hot-Humid and Hot-Dry Climates", held by the Building Research Advisory Board, has been published by the board under that title. The studies are pertinent to the southern and southwestern sections of the United States and to the country's military and industrial installations abroad.

The report is a collection of 17 papers by leading technologists on hot-climate buildings, and contains theories and solutions to problems developed through practical experience in addition to detailed technical studies. Many photographs and diagrams illustrate the report.

The book sells for $6.00 and may be had by writing to the Building Research Advisory Board, National Academy of Sciences, National Research Council, Division of Engineering and Industrial Research, 2101 Constitution Ave., Washington 25, D. C.

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Have been proven:

1. Low in original cost
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3. Longer lasting
4. Easy to use
5. Economical for all type Jack Hammers

⅞" Socket in 9 sizes, 1¼" to 1¾"
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CONVENTIONAL ROCK BITS GIVE WAY TO IMPROVED MODERN DESIGN

Write for prices and full details

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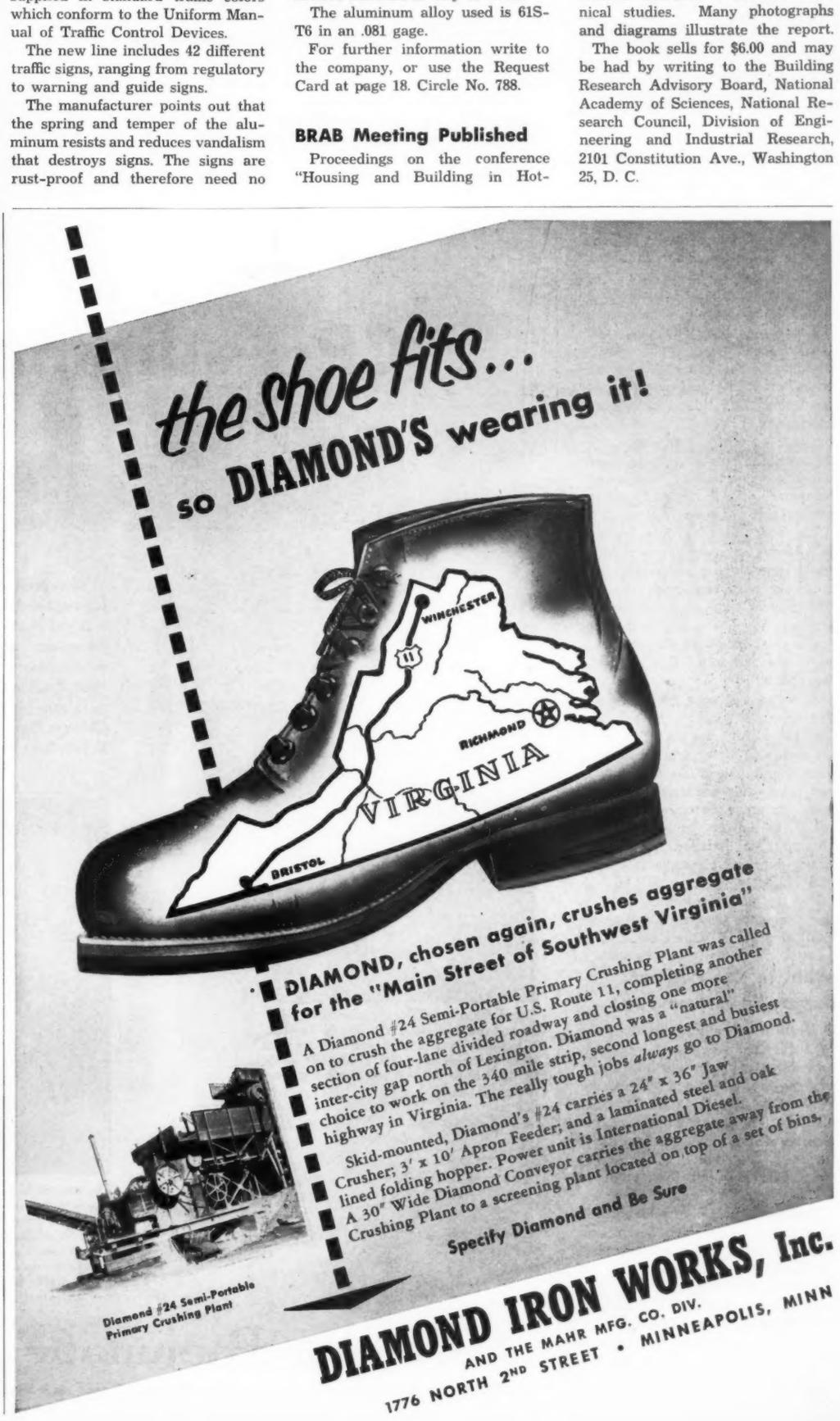

the shoe fits...
so DIAMOND'S wearing it!
WINCHESTER
11
RICHMOND
VIRGINIA
BRISTOL
DIAMOND, chosen again, crushes aggregate for the "Main Street of Southwest Virginia"
A Diamond #24 Semi-Portable Primary Crushing Plant was called on to crush the aggregate for U.S. Route 11, completing another section of four-lane divided roadway and closing one more inter-city gap north of Lexington. Diamond was a "natural" choice to work on the 340 mile strip, second longest and busiest highway in Virginia. The really tough jobs always go to Diamond.
Skid-mounted, Diamond's #24 carries a 24" x 36" Jaw Crusher; 3' x 10' Apron Feeder; and a laminated steel and oak lined folding hopper. Power unit is International Diesel. A 30" Wide Diamond Conveyor carries the aggregate away from the Crushing Plant to a screening plant located on top of a set of bins.
Specify Diamond and Be Sure
Diamond #24 Semi-Portable Primary Crushing Plant
DIAMOND IRON WORKS, Inc.
AND THE MAHR MFG. CO. DIV.
1776 NORTH 2ND STREET • MINNEAPOLIS, MINN

Rock-Type Dump Body

■ A new rock-type dump body made for hauling abrasive materials is announced by the Galion Allsteel Body Co., Galion, Ohio. The new unit is said to withstand the hard shock of power shovel, chute, and conveyor loading. It is available in 5 to 15-yard sizes.

The body is constructed of high-tensile steel plate, and features both horizontal and vertical extra-wide box-type side bracing on the head sheet and sides. Side braces extend up under a 4 x 4 x ½-inch top roll. According to the manufacturer, the new rock body design eliminates side bulging. The driver's compartment is protected by a box-braced cab protector.

The body sides fold into the floor at a 45-degree angle to prevent material from lodging in corners. This angle is reinforced with flat 45-degree steel plates at the outrigger-type crossmembers. The body floor is also reinforced with a 2-inch hardwood liner inside the floor shell and wear plate.

A scow-type rear end, at a 15-degree angle, replaces the tail gate. Another feature is a device mounted on each side of the truck body and hoist frame. It absorbs damaging warp and strain and is said to reduce body maintenance expense and to result in longer dump-body life. Dumping is handled by Galion heavy-duty hoist models 880, 1000, and 77353.

For further information write to the company, or use the Request Card at page 18. Circle No. 692.

What to Know About Surveying Instruments

■ New literature describes the parts of surveying instruments, explains how they work, and tells how to use them to best advantage. The David White Co., 315 W. Court St., Milwaukee 12, Wis., is making available a series of such lessons on its instruments. The White U. S. Army Transit is the first instrument to be discussed.

Typical topics discussed include essential characteristics, design and construction details, and simple tests for determining the qualities of a transit. The literature also tells how to set up a transit and reviews some uses and manipulations.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 733.

Steel Post-Shore Has Convertible Heads

■ A new post-shore is said to eliminate the necessity of stocking extra shores with special heads to meet varying shore requirements, according to Universal Mfg. Corp., Zelienople, Pa. Standard 6 x 6 heads can be converted to either T or J heads on the job without the use of special tools.

The Universal post-shore is erected in two operations. The telescoping upper member is positioned at the nearest height needed for rough adjustment and the collar-sleeve is then turned to raise the shore to the exact height required. Since the rough adjustment positions are located every 3 inches, this vernier adjustment need not exceed 3 inches.

The steel post-shore will shore slabs from 6 to 15½ feet in height. Three models are available: APS-610 (6 to 10 feet), APS-813 (8 to 13 feet), and APS-1015 (10 to 15½ feet). All models have a standard scab-plate welded to the base member.

The shore can be adapted, with optional equipment, for use with Universal Ezebilt scaffolding.

For further information write to the company and request Bulletin A-381 or use the Request Card at page 18. Circle No. 688.

New Waterproof Boot

■ A waterproof boot that is worn over work shoes is offered by Tyer Rubber Co., Andover, Mass. The all-rubber boot has a high pile fleece-face lining throughout for comfort and warmth, and it closes by zipper. Soles are of heavy crepe.

The "Huskie" is made in Cordovan brown rubber only in sizes 6 to 13.

For further information write to the company, or use the Request Card at page 18. Circle No. 818.

CP Equipment

Makes the T

The speed and efficiency in which a construction job is completed depends upon the pace set by the slowest piece of equipment involved. Don't let one piece of "worn-out" machinery cause you costly construction delays. Maybe now is the time for you to review *your* equipment needs. If so, call your nearby CP sales engineer to inform you of the latest product developments. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

There are seven different models of CP Pneumatic and High Frequency Electric Vibrators — available in one and two man types in frequencies to 10,000 VPM. The pneumatic CP-417 above is ideal for batches up to two cubic yards.

The rugged G-300 Wagon Drill and 70-NDC Drifter powered by the diesel driven CP Portable Air Compressor in the foreground form the perfect team for dependable, low-cost drilling from every angle. The cost-conscious Compressor's gradual speed regulator governs engine speed to conform to drill's air demands. CP Portable Compressors are available in capacities from 60 to 600 cfm. Gasoline or diesel driven.

Chicago Pneumatic

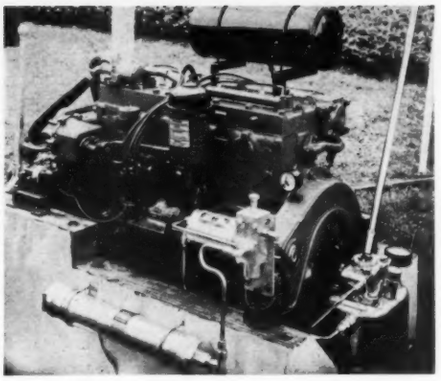
PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

New Hydraulic Motor For Cranking Engines

■ A new hydraulic cranking motor eliminates the use of storage batteries and electric or pneumatic starters for cranking heavy duty engines. According to the manufacturer, the Hydrotor starts heavy-duty engines at both sub-zero and very high temperatures.

The unit is made in three sizes to crank most diesel or gas internal combustion engines. Among other advantages of the Hydrotor cranking motor are compactness and safety. It is also pointed out that the closed hydraulic system does not require periodic check ups as do electric or pneumatic systems.

For installations requiring frequent starting, a small displacement engine-driven pump and unloading valve are furnished to recharge the hydraulic accumulator during engine operation. The system, including the automatic recharging pump, is operated in the same manner as an electric or pneumatic unit. The manufacturer points out that an advantage of the Hydrotor hydraulic cranking system is that energy can be restored to the accumulator by a few strokes of the hand pumps while a discharged battery or a depleted air receiver may result in complete failure of the motive power.



The hydraulic cranking motor produced by Hydromotive, Inc.

For further information write to Hydramotive, Inc., 2323 East 67th St., Dept. H-6, Cleveland 4, Ohio, or use the Request Card at page 18. Circle No. 748.

Precast Bridge Slabs Of Reinforced Concrete

■ Precast reinforced - concrete bridge slabs for use on highway and road construction and for replacement of worn out bridges are made by Choctaw, Inc., P. O. Box 2057, Memphis 2, Tenn. The manufacturer states that these slabs were designed by the Arkansas Highway Department for H-15 loading and are of channel design with a diaphragm across the ends and center. The interior sections are 3 feet 6 inches wide and the curb units are 3 feet 6 inches or 3 feet 9 inches wide. Lengths are available in 15 and 19 feet. By the use of various combinations of a number of units, bridges 20 to 24 feet wide or wider may be erected.

The exterior units have a monolithic curb section. Two bolts connect the sections transversely and one bolt hole is provided in the ends where multiple spans are used. Holes are provided in the curb sections, to which guardrail posts may be bolted for the erection of beam-type guardrails. The slabs may be placed on timber piles with timber caps, and they have been used with concrete piles and concrete caps as well.

The precast bridge units are manufactured to a tolerance of ¼ inch in a 19-foot length of slab and ⅛ inch in the vertical direction.

The speed with which a precast concrete bridge may be erected and ready for use is the one chief advantage offered. This avoids the necessity of closing up a road and causing traffic to detour for long periods, the manufacturer points out.

The concrete bridge slabs are delivered to the site of the bridge by Choctaw trucks, and a lifting hook is provided with which these slabs can be unloaded from the trucks and placed in position on pile bents.

For further information write to the company, or use the Request Card at page 18. Circle No. 706.

Portable Air-Heater

■ A portable forced-air heater that produces 1,600 cfm of air at a temperature of 200 to 300 degrees is shown in literature from the Scheu Products Co., Ltd., 272 Stowell St., Upland, Calif. Discharge rating of the Hotshot heater is 300,000 btu per hour at a fuel consumption of 2¼ gallons.

The heater is available with either a 1-hp G-E electric motor or a Briggs & Stratton 1.5-hp gas engine. The unit comes with a 30-gallon tank and has a 20-gallon operating capacity burning 8 hours without refueling.

The heater burns fuel oil and is said not to emit poisonous gases and obnoxious odors. It can be used for space heating, spot heating, preheating, ventilating, curing, and drying.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 785.

Team!

One man using this "economy-minded" Super Triplex Backfill Tamper can do the work of five men using single tampers — affording better distribution of man power and far less tool investment. It not only saves on air consumption and air hose, but assures higher quality backfill compaction in less time!

This Wood Preparizer powered by an International UD-24 diesel engine, mixes fill in 6-foot widths, using an International TD-24 crawler tractor for the towing unit. R. H. Wright & Son, Uleta, Fla., used this equipment to modernize 7 miles of Route 9 just north of Miami.

Florida Superhighway Paved With

Bituminous Concrete On Lime-Rock Base

THE FIRST SECTION of a proposed limited-access superhighway through Florida's thriving southeast coastal area was completed this spring near the city of Hollywood, Fla. Extending from Opalocka to the Broward County, Fla., line, the 7.3-mile stretch of State Route 9 will relieve congestion on both U. S. 1 and State Route 7.

R. H. Wright & Son, Fort Lauderdale, Fla., was awarded the $600,000 contract by the Florida State Road Department. Work began in August 1952 and was completed about June 1 of this year.

Grading had been done several years before under a previous contract. Wright's work consisted primarily of stabilizing about 400,000 square yards of roadbed with sludge and lime-rock tailings, and grading the entire project. He subcontracted the 234,000 square yards of 8-inch-thick compacted lime-rock base course to Brooks Paving Co. of Miami, Fla., and the 232,000 square yards of bituminous concrete surface course to Broward Asphalt Corp. of Fort Lauderdale.

The plans called for building a modern 4-lane divided highway with a depressed median varying in width from 10 to 72 feet. Opposing lanes

Greater Loading and Unloading Capacity with

ATLAS

CONVEYING AND LOADING EQUIPMENT

MODEL 124 ATLAS CAR UNLOADER, UNLOADING SLAG.

Atlas Car Unloaders are giants for performance! They have earned a reputation throughout the country for efficient and reliable material handling operations with exceptionally low operating and maintenance costs.

Please send me your bulletin on the Model 124 Atlas Car Unloader.

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ATLAS CONVEYOR CO.,
CLINTONVILLE, WIS.

drills 6 inches of concrete per minute

...gives lowest cost per foot of concrete drilled with a

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ROTARY KONKRETE KORE DRILL

Patented core slot expels cuttings automatically

U. S. Pat. No. Re. 23539

Drill straight, clean, ready-to-use holes at speeds up to 6 inches per minute—even through steel reinforced concrete. TILDEN Rotary Konkrete Kore Drills can be used with ordinary electric or rotary air drill. Free Factory sharpening and repair service still available on all Standard TILDEN Drills from 3/16" to 8-inch diameters. Interchangeable shanks for any depth hole.

WRITE TODAY for free, illustrated catalog.

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BRADFORD ELECTRIC SAWS

Model 160 — 6" Saw
(Can be furnished with blade on right or left side)
Vertical depth of cut 2"
Bevel cut at 45°: 1¼"
Net weight 10 lbs. 8 oz.

Model 180 — 8" Saw
Vertical depth of cut 2 29/32"
Bevel cut at 45°: 2 1/16"
Net weight 17 lbs. 8 oz.

These new 6" and 8" Bradford Portable Electric Saws are ruggedly constructed and fully powered to take on the toughest sawing jobs! They're better designed—inside and out—for easier handling, smoother sawing, more accurate work. You can feel the difference in the Bradford design!

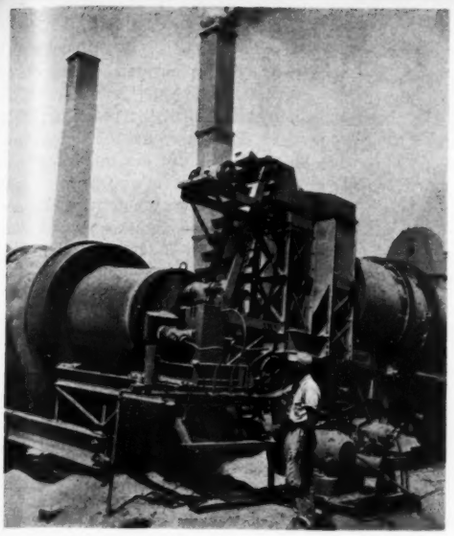
And Bradford Saws are built to last. Ball bearings with permanent lubrication are used throughout. Gears are helical cut to give maximum driving power. A powerful 110-volt AC/DC motor drives the blade with quiet, cool-running efficiency. See your Bradford dealer for a demonstration.

WRITE for detailed descriptive literature on these time- and labor-saving Bradford Saws.

THE BRADFORD MACHINE TOOL CO.

653 Evans Street Cincinnati, Ohio

Precision since 1840



E. B. Comodari, superintendent for Broward Asphalt Corp., adjusts burner controls on one of two Cedarapids dryers.

A view of trucks being loaded from the portable Cedarapids plant, which has a Barber-Greene portable pugmill. A hydraulically-operated hopper prevents segregation of the mix when the trucks are loaded.

are 24 feet wide and slope 3/16 inch per foot from the median edge. Median slopes are ¾ inch per foot and side slopes are 6 to 1. Lanes are flanked by 8-foot-wide stabilized shoulders sloping ¾ inch per foot.

In cross section, the pavement consists of 2½ inches of bituminous concrete, on 8 inches of compacted lime rock, on 12 inches of stabilized subgrade. Base course was compacted to 95 per cent density, and subgrade to 100 per cent.

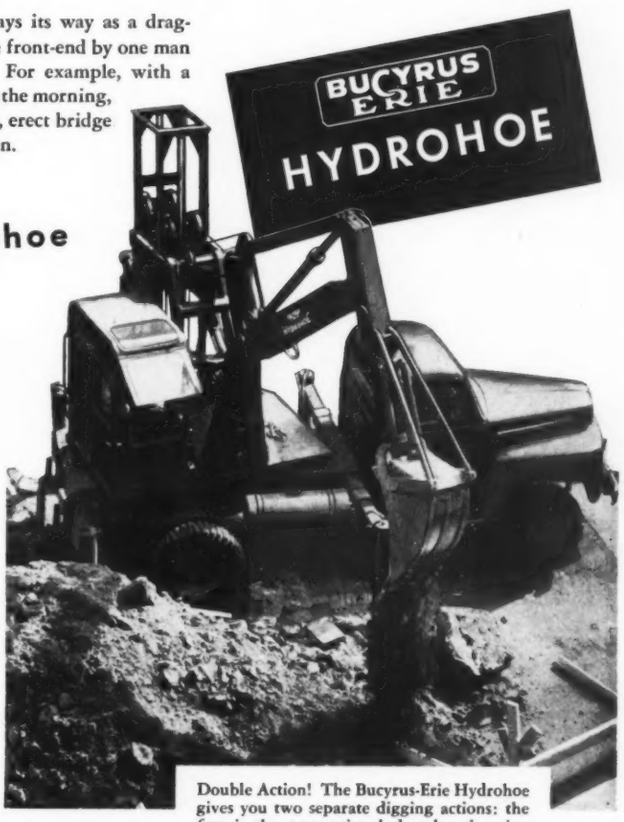
Stabilization

The high density requirement of the stabilized subgrade was achieved without much difficulty. Wright first stripped off the top 6 inches of the roadbed and piled it along the shoulder. The bottom 6 inches was covered with a layer of fine lime rock excavated from the contractor's pit adjacent to the job. A General crane with a dragline bucket loaded a fleet of 5-yard trucks which hauled the material to the road. The dumps were leveled by two Caterpillar D8 dozers, a D7 dozer, and an International TD-10. Two Caterpillar No. 12 graders spread out the material evenly on the subgrade. Then a Wood Preparizer pulled by a TD-24 or a Seaman Pulvi-Mixer followed behind to complete the mix-in-place operation. Tank trucks applied water as several 3-wheel

(Continued on next page)

Double-Action DRAGSHOVEL WITH A QUICK-CONVERSION BONUS

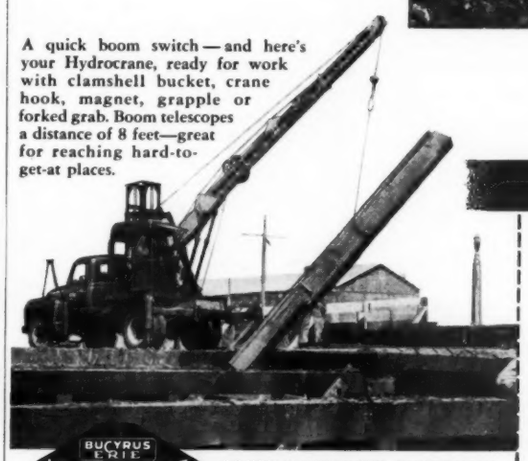
THE Bucyrus-Erie Hydrohoe not only pays its way as a dragshovel, but it has been converted to crane front-end by one man in less than one hour (actual time test). For example, with a Hydrohoe you can dig trenches or footings in the morning, then convert to crane front-end and set pipe, erect bridge sections or handle road forms in the afternoon.



Look at these Hydrohoe Advantages

- **Telescoping boom eliminates up to 40 percent of time lost moving up.**
- **Precision control — every work function fully hydraulic.**
- **No bails, sheave blocks or drag ropes to interfere with loading.**
- **By telescoping boom, operator can peel off scallops at grade level — dig a smooth, level trench.**
- **Hydraulic ejector, built into dipper, assures fast, clean dipper dump — makes it practical to use a narrow, 12-inch wide dipper.**
- **Travels up to 50 mph on open highway.**

Double Action! The Bucyrus-Erie Hydrohoe gives you two separate digging actions: the first is the conventional dragshovel action of the dipper moving through its digging arc; the second, a separate horizontal stroke, obtained by telescoping the boom. Unit is available with both 18- and 12-in. wide bucket.



A quick boom switch — and here's your Hydrocrane, ready for work with clamshell bucket, crane hook, magnet, grapple or forked grab. Boom telescopes a distance of 8 feet—great for reaching hard-to-get-at places.

BUCYRUS ERIE HYDROCRANE SOUTH MILWAUKEE, WISCONSIN

Send coupon for full details

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South Milwaukee, Wisconsin

Gentlemen:

☐ Please send Hydrohoe and Hydrocrane literature.
☐ I am interested in a demonstration.

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CAPACITY TO 600 TONS

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789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

Florida Superhighway

(Continued from preceding page)

rollers achieved the required compaction.

The top 6 inches of the subgrade which had been piled along the side was then replaced and the stabilization operation repeated. The work was divided between Wright, who did all the mixing, and Brooks Paving Co., who achieved the proper density.

Spreading, processing, and finishing the lime-rock base course was also done by Brooks. With a Northwest crane and about 20 trucks, the contractor excavated base-course material from another adjacent pit and hauled it to the road. A TD-6 and a TD-18 leveled the dumps and 3 cat No. 12 graders spread out the 4-inch lifts. To get 95 per cent Proctor density, the contractor used a Buffalo-Springfield, an Austin-Western, and 2 Galion rollers—all 10 to 14-ton units. Optimum moisture was achieved with four 1,000-gallon tank trucks, all Fords.

When a sufficiently long section of

A Barber-Greene finisher laying surface course on the new limited access 4-lane State Route 9. Etnyre distributor on right was used to apply the tack coat.

There is a GM Diesel Engine Distributor Near You

ALABAMA—Birmingham 1
ARMSTRONG EQUIPMENT CO.
Montgomery 1
ALABAMA MACHINERY & SUPPLY CO.

ARIZONA—Phoenix
O'CONNELL BROTHERS, INC.

ARKANSAS—North Little Rock
LEWIS-DIESEL ENGINE CO.

CALIFORNIA—Berkeley
WEST COAST ENGINE & EQUIP. CO.
Los Angeles 21
ANDERSON-O'BRIEN CO.

COLORADO—Denver 9
THE COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

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HOLMES-TALCOTT, INC.

FLORIDA—Jacksonville 2, Miami
FLORIDA DIESEL ENGINE SALES

GEORGIA—Atlanta 2
BLALOCK MACHINERY & EQUIPMENT CO.

IDAHO—Boise, Idaho Falls, Twin Falls
SOUTHERN IDAHO EQUIPMENT CO.

ILLINOIS—Bellwood, Rockford, Rock Island
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WESTERN SERVICES

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KANSAS—Wichita, Great Bend
DIESEL EQUIPMENT CO., INC.

KENTUCKY—Lexington 47, Louisville
BOGIE EQUIPMENT COMPANY

LOUISIANA—Harvey
GEORGE ENGINE CO., INC.
Shreveport
UNITED TOOL CO.

MAINE—Portland 3
EASTERN TRACTOR & EQUIPMENT CO.

MARYLAND—Baltimore 30
McCLUNG-LOGAN EQUIPMENT, INC.

MASSACHUSETTS—Woburn
MORRISSEY BROTHERS TRACTOR CO.

MICHIGAN—Detroit 4, Grand Rapids
THE EARLE EQUIPMENT CO.
Iron River
DROTT TRACTOR CO., INC.

MINNESOTA—St. Paul, Duluth
BORCHERT-INGERSOLL, INC.

MISSISSIPPI—Jackson, Louisville
TAYLOR MACHINE WORKS

MISSOURI—North Kansas City
K C DIESEL POWER COMPANY
St. Louis 10
WESTERN MACHINERY & ENGINE CO.

MONTANA—Billings
SEITZ MACHINERY CO., INC.
Missoula, Kalispell
MOUNTAIN TRACTOR COMPANY

NEBRASKA—Omaha 2
FEHRS TRACTOR & EQUIPMENT CO.

NEVADA—Reno
SIERRA MACHINERY CO., INC.

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NEW YORK—Buffalo 10
BROCK TRACTOR COMPANY, INC.
New York 54
GRIFFIN EQUIPMENT CORP.
Syracuse 2
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NORTH CAROLINA—Greensboro
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So. Fairmont
PAY C. CALL COMPANY

WASHINGTON—Seattle 9
EVANS ENGINE & EQUIPMENT CO., INC.
Seattle 4, Anchorage, Fairbanks
YUKON EQUIPMENT CO., INC. (ALASKA)
Spokane
MODERN MACHINERY CO., INC.

WISCONSIN—Milwaukee 3, Rice Lake
DROTT TRACTOR CO., INC.

WYOMING—Casper
THE COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

GM DIESEL
CASE HISTORY NO. IA5-40

OWNER: Flomaton Gravel Company, Flomaton, Alabama

INSTALLATION: GM 4-71 Diesel powers a Pekor 6" centrifugal pump on sand dredge. Pumps 400 to 450 feet to discharge table with 40-foot head. Engine replaced another make Diesel in 1947.

PERFORMANCE: Owner reports repowering boosted production 50% with no increase in fuel costs. He now pumps 35 to 40 cu. yds. per hour, operating 8 hours a day, year around. GM Diesel has required no repairs in six years.

It pays to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL POWER

PUMPS 50% MORE SAND USES NO MORE FUEL

After seeing what this engine did, Owner A. R. Bethea powered two other dredges with General Motors Diesels. Besides being steady, dependable producers, GM Diesels' compactness and lighter weight permitted him to build lighter and less expensive dredges.

A GM Diesel engine boosts production on all kinds of heavy-duty jobs because, with power on *every* piston downstroke, it delivers smoother, steadier power. Its simple, rugged design keeps your equipment on the job and working at top speed. It has no troublesome high pressure fuel lines to cause costly delays.

And when service is needed, you'll find the cost surprisingly low. GM Diesel parts cost less. They're readily available everywhere. They're quick and easy to replace. If you want to boost production and reduce operating expense, find out about GM Diesel power. Contact your distributor or write us for complete information.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

base course was laid and compacted, the surface was finished off to provide a smooth base for the bituminous concrete top. The finishing operation consisted of scarifying, rolling, and water bonding; hard planing with graders; and then priming with 0.13 gallons per square yard of RT-3 tar. This was covered with a light sand coat and allowed to cure from 6 to 8 days. Before the 1½-inch binder course was laid, the surface was tack-coated with 0.05 to 0.08 gallons per square yard of RC-1S cutback asphalt.

Bituminous Concrete

With a schedule permitting only two months to complete the 7.3 miles of 4-lane surfacing, Broward Asphalt Corp. had to streamline both the mixing and laying operations as much as possible. A new Cedarapids continuous-mix portable asphalt plant was brought in and set up about 1,000 feet from the road and a similar distance from the plant of the aggregate supplier, Hallandale Rock Co.

To produce the maximum amount of high-quality mix, the plant was equipped with double dryers, each 72 inches in diameter and 24 feet long. Maxon low-pressure burners were used with the dryers. The new Cedarapids gradation control unit was also installed, and the contractor reported that the system had an efficiency of 75 per cent at 113 tons per hour. Capacity averaged 800 tons per 9-hour day.

The 85 to 100-penetration asphalt was supplied by the Mexican Petroleum Co. of Tampa, Fla., and delivered in three 5,600-gallon tank trailers. A 3-inch pump transferred the bitumen to two 10,000-gallon insulated storage tanks. A Hopkins hot-oil system with an Iron Fireman burner heated these tanks. Fuel for the burner was stored in a third 10,000-gallon tank.

Another unit which speeded production was the Barber-Greene Model 848 portable pugmill with a new type of hydraulically-controlled hopper that accumulated the continuously moving material and dumped it into the trucks in large batches. This prevented segregation of the mix.

Stockpiles were serviced by a TD-14 dozer as a P&H crane with a clamshell bucket fed the 3-compartment bin. The entire plant was operated electrically from a 236-kw Caterpillar diesel engine-generator.

Because of the relatively short haul, eight 7-yard rented trucks could supply hot-mix to the two Barber-Greene finishers that worked as a team. One 5 to 8-ton Buffalo-Springfield tandem roller kept close behind the finishers to provide the initial seal compaction. An 8 to 10-ton unit followed later to complete the operation.

Aggregate for the 1½-inch binder course consisted of about 80 per cent stone and 20 per cent sand; bitumen 5 per cent by weight of mix.

The 1-inch surface course was made up of about 60 per cent stone and 40 per cent sand. Coarse screenings, fine lime rock, and local sand were blended in the stockpiles to provide the required aggregate. Six per cent by weight of asphalt was used.

Personnel

Superintendent for R. H. Wright & Son, the prime contractor, was George Harris. B. Groover was superintendent for Brooks Paving Co. and E. Comodari was superintendent for Broward Asphalt Corp. Paul C. Hale was project engineer for the Florida State Road Department, which is headed by Sam P. Turnbull, state highway engineer.

Carbide-Tipped Blades For Radial-Type Saws

■ A new line of carbide-tipped saw blades for radial saws is announced by the Delta Power Tool Division of Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa. Tipped with tungsten carbide, the new blades will cut wood, wood laminates, plastics, metals, and other abrasive materials. They will also cut nails, wires, and similar obstructions, and are suitable for reworking grit-covered concrete forms and for other operations on abrasive materials that quickly dull standard blades.

Other advantages cited for the blades are faster cutting, less danger of kickback, smoother cutting, and freer cutting with less operator fatigue.

The blades are offered in 10, 12, and 14-inch diameters to fit standard arbors and in 24, 30, and 36-tooth types respectively.

For further information write to the company, or use the Request Card at page 18. Circle No. 686.

Smith Appoints Bailey

Robert S. Bailey has been appointed the southern California representative for the Smith Engineering Works, Milwaukee, Wis., manufacturer of Telesmith crushers and other equipment for contractors. Mr. Bailey will cover counties south of, and including San Luis Obispo, Kern, and Inyo. His office is at 816 W. Fifth St., Los Angeles 17, Calif.

WYCO 2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR

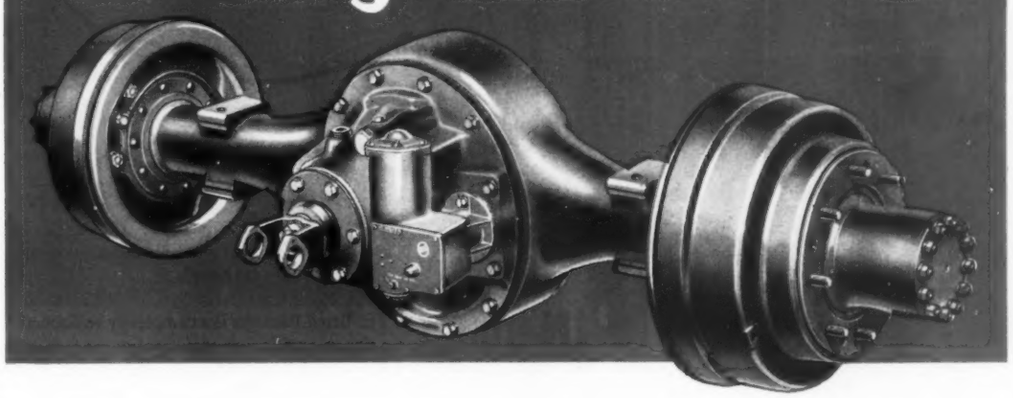
Place Concrete faster! Light - Powerful

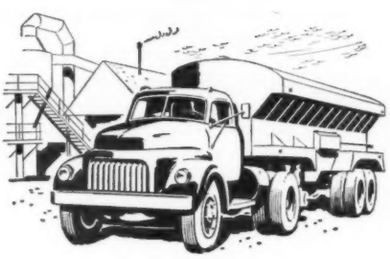
WRITE FOR CATALOG WYCO GASOLINE AND ELECTRIC VIBRATORS

$297.00 UP FOB CHICAGO

WYZENBEEK & STAFF, INC.
223 NO. CALIFORNIA AVE. CHICAGO, ILLINOIS

With Eaton 2-Speed Axles, a cost-cutting gear ratio for every road and load



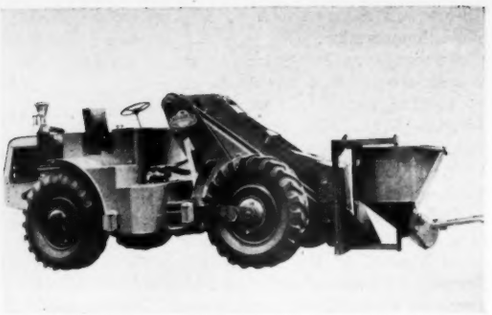


More than a million-and-a-half Eaton 2-Speeds in trucks today!

Eaton 2-Speeds enable drivers to select the right gear ratio for every operating condition—starting out under full load, climbing grades, high-balling, quick shifting in traffic. Engines operate in their most efficient speed range, reducing stress and wear on vital truck parts. Operating and upkeep costs are at a minimum; trucks last longer, are worth more when traded in. Ask your dealer to explain how Eaton 2-Speed Axles give trucks power when needed, speed when wanted.

EATON
AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers - Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



At left, the LD10 Scoopmobile front-end loader with a 96-inch dozer blade; above, with the concrete-hopper attachment.

Five New Attachments For Front-End Loader

■ Five new attachments, including a crane boom, a concrete hopper, a dozer blade, a back fill blade, and lift forks are announced for the Scoopmobile Models LD10 and LD5 front-end loaders.

The swivel-type concrete hopper replaces the bucket on the hydraulic hoisting boom and attaches directly to the bucket carriage with the standard bucket mounting shaft and two extra bolts. According to the maker, Mixermobile Manufacturers, 8027 N. E. Killingsworth, Portland 20, Oreg., the changeover from loading to concrete pouring takes place in about 20 minutes. Hopper discharge height is 12 feet 6 inches for the LD10 and 10 feet 6 inches on the LD5. A 5-foot hopper chute and 5-foot chute extension are also available for the attachment. Hopper capacity is 1 cubic yard for the LD10 and ¾ cubic yard for the LD5.

The backfill blade attachment also mounts directly to the bucket carriage on the hoisting boom. The blade is slightly wider than the tire tread and clears a path for the wheels. This means that on the LD-10 the blade is 96 inches wide and on the LD5, it is 84 inches wide. Hydraulic operation of the hoisting boom raises or lowers the blade.

The new lift forks also mount on the hydraulic hoisting boom and are tilted through the same hydraulic cylinder that controls the scoop bucket. Load capacity is 7,000 pounds to a height of 13 feet on the LD10 and 5,000 pounds up to 11 feet on the LD5.

The new 96-inch dozer blade, for the LD10 only, attaches directly to the chassis using a standard mounting bracket and three bolts. The scoop bucket may remain on the hydraulic hoisting boom.

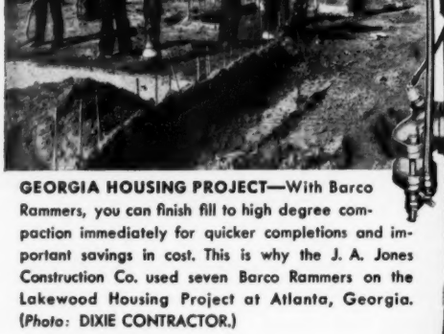
The new attachments, the manufacturer reports, are designed to use the heavy duty power of the 4-wheel-drive, 4-wheel power steer loaders for specialized tasks in construction. Bucket capacities of the loaders are 1 and 2 cubic yards.

For further information write to the company, or use the Request Card at page 18. Circle No. 787.

FOR SOIL COMPACTION IN RESTRICTED AREAS!

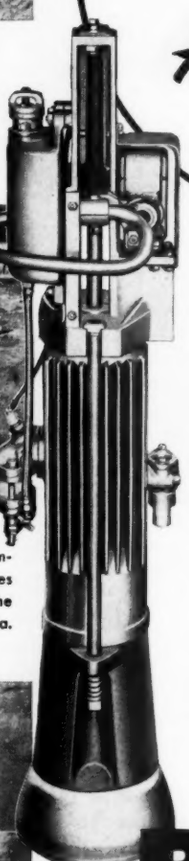
BARCO *is the Answer!*

CALIFORNIA HOSPITAL—Ability to work inside buildings and in other restricted areas makes the Barco Rammer invaluable. The job pictured above is on the Peninsula Hospital near Millbrae, California. *Contractors:* Williams & Burrows and Carl N. Swenson Company. (*Photo:* CONSTRUCTION ILLUSTRATED.)



GEORGIA HOUSING PROJECT—With Barco Rammers, you can finish fill to high degree compaction immediately for quicker completions and important savings in cost. This is why the J. A. Jones Construction Co. used seven Barco Rammers on the Lakewood Housing Project at Atlanta, Georgia. (*Photo:* DIXIE CONTRACTOR.)

NEW YORK DAM—Exacting specifications for soil compaction on the Downesville Dam project of the New York City Board of Water Supply were easily met by Barco Rammers used by Carlo Bianchi & Company. (*Photo:* CONSTRUCTIONEER.)



SOIL COMPACTION is the key to *better construction* on important building projects throughout the country—and on these jobs, BARCO IS THE ANSWER! Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

If you are not already using the Barco Rammer for soil compaction work, find out about it now! *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 518K Hough St., Barrington, Illinois. (*Near Chicago*).

BARCO
"Pegson" Gasoline
RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments — in Trenches, Ditches

FREE ENTERPRISE — THE CORNERSTONE OF AMERICAN PROSPERITY

Detachable Connector For Welding Cable

■ A detachable welding cable connector that is made to prevent accidental disconnection is announced by Dalweld Co., 1 Bertel Ave., Mount Vernon, N. Y. The connector has an expander-type male end which makes a large contact area. When this is inserted into the female end with a quarter turn it makes a wipe-joint fit. The connectors are made for both solder and mechanical connections in 400 and 600-amp capacities.

Current-carrying parts are made from bar brass. The casing is an insulating fibre tube.

For further information write to the company, or use the Request Card at page 18. Circle No. 726.

Cover for Masonry Joints

■ A metal cover for exposed surface joints in masonry that protects the joints from moisture or frost is shown in literature from Dusing & Hunt, Inc., 1927 Elmwood Ave., Buffalo 7, N. Y. The cover is set in regular masonry mortar, and no special mastic compounds are needed. It is rolled in one continuous section from an aluminum alloy strip.

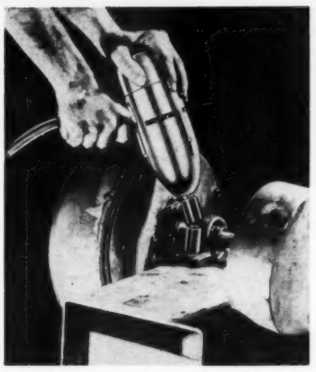
The portion of the T-shaped metal cover that is inserted into the masonry expands into an open V as the masonry joint cracks to fill the opening joint. The top member of the metal cover also moves back and forth with the expansion or contraction in the joint. The dam of bonded mortar under the cover cap remains stationary at all times. Examples of applications are shown in the booklet.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 724.

New Impact Wrench

■ A ½-inch, square-drive, electric impact wrench that can be used with a variety of sockets and attachments is available from Snap-On Tools Corp., Kenosha, Wis. The new tool removes or installs nuts in a fraction of the time needed for standard hand tools and with less effort. It can also be used for driving gear pullers, stud removers, screw driver bits, hole saws, structural reamers, and steel, wood, or mortar bits.

After a certain torque is reached, the rotary action of the heavy duty motor is transferred through the impact mechanism into sharp blows at the drive spindle. The blows become heavier as the torque increases, so that the larger the nut, the heavier the turning impact it receives. According to the manufacturer, the tool delivers up to 2,000 of these blows per minute, and as there is no direct connection, the motor cannot be stalled or burned out because of overload.



Twisting the end cap provides forward or reverse action. Both the reduction gearing and the impact mechanism are housed in the forward section of the tool and are easily removed for cleaning.

Over-all length of the tool is 10⅛ inches with a maximum diameter of 3 3/16 inches. Two models are available—one for 115 volts, and the other for 220 volts. Both come with 25 feet of neoprene-covered cord.

For further information write to the manufacturer, or use the Request Card that is bound in at page 18. Circle No. 728.

Shunk Personnel Changes

Three shifts in personnel have been announced by the Shunk Mfg. Co., Bucyrus, Ohio, manufacturer of grader and maintainer blades, trench, bucket, and wheel-type excavators, and spreaders and finishers.

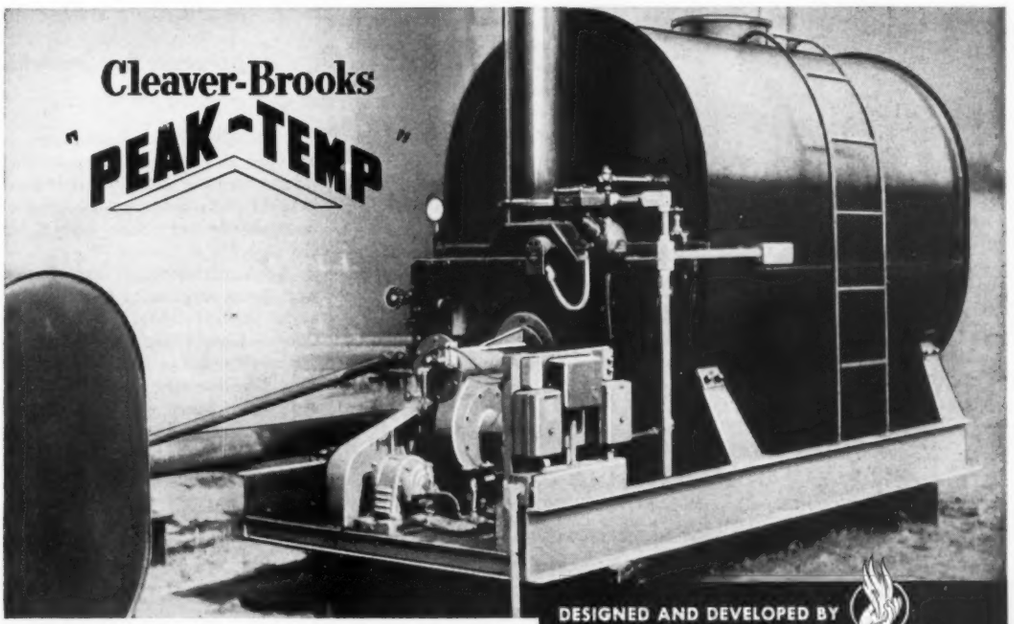
"Warning signs? Heck, they slow down for my tripod!"

Warren B. Irish has been appointed regional sales manager to represent the company in Ohio, western Pennsylvania, and West Virginia. Larry Efaw has been named office sales manager, and Oscar C. Geiser has been placed in charge of customer relations for the company.

CLEAVER-BROOKS—DISTRIBUTORS

ALABAMA—J. D. Pittman Tractor Co., 500 N. 28th St., Birmingham 2; Burford-Teethaker Tractor Co., 2521 Halls Mill Rd., Mobile; P. O. Box 1591, Montgomery 2.
ARIZONA—Arizona Cedar Rapids Co., 1726 W. Jackson St., Phoenix.
ARKANSAS—Clark Equipment Co., Cantrell Rd. and Baker St., Little Rock.
CALIFORNIA—Casson Hale Corp., 22101 Meekland Ave., Hayward; Standard Steel Corp., 5001 Boyle Ave., Los Angeles 58.
COLORADO—H. W. Moore Equipment Co., 6th and Acoma Sts., Denver 1.
CONNECTICUT—Deephouse Equipment Co., 160-170 Farmington Ave., Berlin.
D. C., WASHINGTON 2—Hovey-King Co., 314-316 Randolph Pl., N.E.
FLORIDA—Florida-Georgia Tractor Co., Beaver and Huron Sts., Jacksonville; 3139 W. Miami Ave., Miami; P. O. Box 1511, Lakeland; Box 987, New Quincy Highway, Tallahassee; P. O. Box 2245, Tampa.
GEORGIA—W. C. Caye & Co., Inc., 787 Windsor St., S.W., Atlanta.
ILLINOIS—Hillsman Equipment Co., Box 170, Bloomington; 2000 N. Hawthorne, Melrose Park; Wisner, Inc., 821 Main St., Peoria; 1319 Broadway, Rockford, 526 - 11th St., Rock Island.
IDAHO—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 N. Fourth, Pocatello.
INDIANA—Reid-Holcomb Co., 1815 Kentucky Ave., Indianapolis.
IOWA—James W. Bell Co., Inc., 1720 1 Ave., N.E., Cedar Rapids; 2818 Fifth Ave., Des Moines 13.
KANSAS—The Victor L. Phillips Co., Box 1557, Wichita.
KENTUCKY—Bogle Equipment Co., 801 E. Third St., Lexington 47; 1212 S. Seventh St., Louisville.
LOUISIANA—Frank P. Fischer Engineering Co., 7024 Maple St., New Orleans 18.
MAINE—Parker-Danner Co., Riverside Drive, Augusta.
MASSACHUSETTS—Parker Danner Co., 25 Factory St., Hyde Park 36; 71 Needham St., Newton Highlands.
MICHIGAN—Eddy & Co., 2500 S. Pennsylvania Ave., Lansing 4; Straits Engineering Co., 400-2 Ashmun St., Sault Ste. Marie.
MINNESOTA—Ruffridge-Johnson Eq. Co., 250 Tenth Ave., S., Minneapolis.
MISSISSIPPI—Watkins-Aldridge Equipment Co., 912-916 S. State St., Jackson.
MISSOURI—The Victor L. Phillips Co., 18th and Baltimore Sts., Kansas City; The George F. Smith Co., 5215 Manchester Ave., St. Louis.
MONTANA—Hall-Perry Machinery Co., 304 Fratt Bldg., Billings; 802-812 E. Iron St., Butte; Coram; P. O. Box 307, Great Falls; Missoula.
NEBRASKA—Andersen Equipment Co., 200 Merchants Nat'l Bank Bldg., Omaha 8.
NEW HAMPSHIRE—Parker-Danner Co., 507 Elm St., Manchester.
NEW JERSEY—R. E. Brooks Co., Route 17, Box 17, Hasbrouck Heights.
NEW MEXICO—R. L. Harrison Co., Inc., 1801 N. Fourth St., Albuquerque.
NEW YORK—Syracuse Supply Co., 76 Wall St., Binghamton; 2080 Military Rd., Buffalo 17; R. E. Brooks Co., 50 Church St., New York; Syracuse Supply Co., Portville Road, Olean; Van's Equipment Sales, Inc., Routes 9 and 20, Rensselaer; 1349 University Ave., Rochester; Syracuse Supply Co., 294 Ainsley Drive, Syracuse.
NORTH CAROLINA—North Carolina Equipment Co., P. O. Box 5006, Asheville; P. O. Box 1205, Charlotte; P. O. Box 128, Guilford; P. O. Box 655, Wilmington; 3101 Hillsboro St., Raleigh.
NORTH DAKOTA—Northwestern Equipment, Inc., 715 11th St., Bismarck; 901 Eighth St., Devils Lake; P. O. Box 110, Dickinson; P. O. Box 152, Fargo; P. O. Box 335, Minot; P. O. Box 826, Wahpeton.
NEVADA—Sierra Machinery Co., 307 Morrill Ave., Reno.
OHIO—The W. W. Williams Co., 914 Main St., Cincinnati; 18301 Brookpark Rd., Cleveland 11; 835 W Goodale Blvd., Columbus; 1260 Conant St., Maumee
OKLAHOMA—The Victor L. Phillips Co., 1101 E Archer, Tulsa; 1222-24 W. Main St., Oklahoma City
OREGON—Howard-Cooper Corp., Highway 99E, P. O Box 443, Albany; Highway 99, P. O. Box 66, Central Point; P. O. Box 1, Coquille; First and Van Buren Eugene; 5821 N. E. Gilsan St., Portland 13; 225 E 2nd Ave., S., Roseburg.
PENNSYLVANIA—The Capitol Equipment Co., 5100 Paxton St., Harrisburg; Alan A. Wood, 1649 N. Broad St., 905 Ward Bldg., Philadelphia; Orave-Doyle Co., 2601 Preble Ave., N.S., Pittsburgh 12.
RHODE ISLAND—Parker-Danner Co., 139 Allens Ave., Providence.
SOUTH CAROLINA—South Carolina Equipment Co., 444 Gadsden St., Columbia.
SOUTH DAKOTA—Sioux Road Equipment Co., 500 E Sixth St., Sioux Falls; Box 941, Rapid City.
TENNESSEE—Glenn-Wagner-Wilkinson Co., 202 W. Morelia Ave., Knoxville; Tri-State Equipment Co., 124 E. Calhoun Ave., Memphis; Wilson-Weesner-Wilkinson Co., 310 S. 2nd St., Nashville.
TEXAS—Alamo Iron Works, Brownsville; Corpus Christi Tri-State Equipment Co., 500 E. Overland St., El Paso; Conley-Lott-Nichols Machinery Co., 1311-19 S Ervay St., Dallas 1; Conley-Lott-Nichols Company 3601 Avenue H, Lubbock; Tri-State Equipment Co., P. O. Box 472, Odessa; Alamo Iron Works, Santa Clara & Montana Sts., San Antonio 6.
UTAH—Kimball Equipment Co., 222 W. 17th St., S. Salt Lake City 10.
VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 39th St. and Killam Ave., Norfolk; Natural Asphalt Corp. of Virginia, 1901 Hamilton St., Richmond.
WASHINGTON—Glenn Carrington & Co., 91 Columbia St., Seattle 4; Howard-Cooper Corp., 5045-55 - 4th Ave., S., Seattle 8; Intermountain Equipment Co., 611 E. Sprague, Spokane.
WEST VIRGINIA—West Virginia Tractor & Eq. Co., P. O. Box 473, Charleston; P. O. Box 587, Clarksburg.
WISCONSIN—The Stone Manufacturing Co., 321 N. 25th St., Milwaukee 3; Badger Equipment Sales, Inc., Route 2, Thiensville.
WYOMING—Studer Tractor & Equipment Co., East Yellowstone Highway, Casper.
ALASKA—Glenn Carrington & Co., c/o Westward Hotel, Anchorage.
CANADA—Mussens Canada Ltd., Church St., New Brunswick, Fredericton; Coleman Machinery Co., Ltd., 101 Upper Water St., Nova Scotia, Halifax; Mussens Canada, Ltd., 65 Colborne St., Montreal 3; Ontario Equipment & Supply, Ltd., 111 Morton St., Toronto, Ontario; Frost Machinery Co., Ltd., 971 Erin St., Winnepeg, Manitoba; International Agencies & Machinery Co., 2315 Cambie St., Vancouver, B. C.; Mussens Canada, Ltd., Charest Blvd., Quebec.

NEW Oil Booster uses high-temp oil as heat transfer medium — eliminates water, steam and pressure problems



DESIGNED AND DEVELOPED BY
Cleaver-Brooks
Builders of Equipment for the Generation and Utilization of Heat — Pioneers and Originators of Self-Contained Boilers, Tank-Car Heaters, "Deuce" and Bituminous Boosters

...gives you higher temperatures, faster, with lower fuel costs, less maintenance

"Peak-Temp" is the newest, quickest, lowest-cost way of heating oils, bituminous and heavy viscous materials in tank cars, storage tanks, bulk plants and refineries. By using a specially selected high temperature oil as the heat transfer medium, "Peak-Temp" gives you advantages never before possible in bitumin heating equipment. Look at this speed, economy and versatility!

HEATS TWICE AS FAST AS STEAM— "Peak-Temp" increases the temperature of bituminous materials at the rate of 25° to 30°F per hour. This is approximately twice as fast as with 150 lbs. of steam. Unit operates with oil at temperatures up to 600°F, without special pumps and fittings.

COSTS LESS TO OPERATE— "Peak-Temp" gives considerably more heat than steam unit using the same amount of fuel. What's more, "Peak-Temp" operates at atmospheric pressures, thus eliminating need for licensed engineer. Oil evaporation rate is very low. Users report 50 gallons or less of new oil need be added to system each season.

ELIMINATES WATER AND WEATHER PROBLEMS — "Peak-Temp" eliminates need for water tanks, water pipes, etc. Requires no special foundation. Heavy-duty base, plus self-contained readiness for fuel, electric hookup, simplifies installation. Heat transfer oil has pour point of approx. 5°F, and will not freeze under normal early spring and late fall operations.

"Peak-Temp" can make your bituminous materials handling a top efficiency operation — even on toughest heavy-duty jobs. Write direct for full information — ask for bulletin AD-108.

CLEAVER BROOKS COMPANY
Dept. K, 897 E. Keefe Avenue, Milwaukee 12, Wisconsin.

Quick Facts on "PEAK-TEMP"

- FULLY AUTOMATIC. Operates on the principal of a closed heating system. Quick starts. Quick shutdown.
- OIL and/or GAS FIRED — low-pressure, atomizing-type burner.
- SAFETY CONTROLS — protect circulating system against low oil level.
- MAXIMUM HEAT TRANSFER—Exclusive "Peak-Temp" feature: Colder oil returned from circulating system is baffled to maintain best heat transfer efficiency.
- SELF-CONTAINED — includes pump, valves, piping, temperature and low-level controls, electric motors and controls.
- AVAILABLE IN TWO SIZES of stationary, electric-driven units: Series 1200—and Series 1800.

New steel beams and concrete deck replace wood stringers and flooring on the existing piles and caps of the Chowan River Bridge near Edenton, N. C.

Ready-mix concrete for the east half of the bridge deck is dumped into the forms from a Gar-Bro Power-Cart. Concrete could not be chuted directly from the ready-mix trucks because the west half of the bridge had to be kept open to traffic.

WELLMAN *Williams Type*

MORE YARDAGE PER DAY

● Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

Want Facts?

Write for free descriptive bulletins.

THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue • Cleveland 4, Ohio

DRAGLINE, CLAMSHELL, CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

Traffic Keeps Rolling As

Causeway over Chowan River widened as 24-hour traffic control prevents bottlenecks

When The Age of a heavily-traveled timber causeway passes the quarter-century mark, it is usually time to begin making plans for a new way to get traffic across the river.

The North Carolina State Highway Department faced this problem early in 1951 when the 1½-mile Chowan River Bridge south of Edenton celebrated its silver anniversary. The 18-foot-wide wooden deck structure was approaching the rickety stage, and was inadequate to handle the heavy traffic on U. S. 17, the Ocean Highway.

But the old deck was supported on a group of concrete piles and caps that had plenty of life in them yet. Rather than construct an entirely new bridge either upstream or downstream from the old one, the Department decided to retain the original piles and caps, widen each bent with one new pile, and replace the wood deck with a 26-foot reinforced-concrete roadway. The plan saved money for the State, but provided difficult traffic problems for the contractor, the Bowers Construction Co., Raleigh, N. C. The $1,500,000 job was started in April

TULSA TRUCK POWER WINCHES FOR EQUIPMENT INSTALLATION

Tulsa Winches are designed for heavy and difficult jobs. They are built of the finest available materials insuring long, trouble free service. All Tulsa Winches are equipped with automatic worm brake designed to hold the load while suspended. Load can be lowered only by power. Larger models, such as the Model 64 shown below, are also equipped with drum brake for maximum safety. Tulsa Winches are completely controlled by levers located in the truck cab.

Tulsa Winches are available in capacities from 6500 to 80,000 lbs.

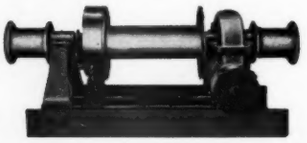
SETTING INDUSTRIAL ENGINE Model 18-G Tulsa Winch (6500 lb. capacity) to raise the gin poles and Model 64 Tulsa Winch (40,000 lb. capacity) to handle the load.

Contact your nearest distributor or write to

Tulsa* Winch

TULSA, OKLAHOMA DIVISION OF VICKERS Inc.

*Reg. U. S. Pat. Off.



FOUNDATION CONSTRUCTION

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DRILLED AND UNDERREAMED

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SPECIAL DRILLING PROBLEMS

Wire or phone for a quotation on your next foundation job —

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A Bucyrus-Erie crane rips up old timber flooring. A job-developed steel beam device enabled the crane to remove more than 10 planks at a time. Here the device is dropped over a group of planks and pulled up to rip them from the stringers.

With a full load of planks, the triple hairpin is hoisted and then unloaded into a truck by tipping. The device is made up of 6-inch steel H-sections. Bowers Construction Co., Raleigh, N. C., had the contract. *C. & E. Photos*

ing As Bridge Is Rebuilt

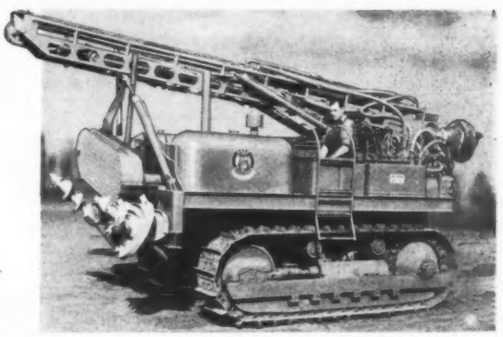
1951 and was completed during the spring of 1953.

Built in 1926, the original structure was about 8,000 feet long, and had a 200-foot swing span and 389 concrete pile bents on 20-foot centers. Bents consisted of three 18-inch octagonally-shaped concrete piles. The center pile was plumb and the two outside piles, 7 feet 7½ inches away, were battered inward ¾ inch per foot. The 19-foot-long concrete cap had an almost-square cross section 2 feet 2 inches x 2 feet. The 18-foot-wide wooden deck with asphalt wearing surface was supported on nine wood stringers.

Rebuilding the causeway consisted primarily of adding another 18-inch concrete pile 7 feet 7½ inches downstream from the original outside pile on each bent, while the end section of the old cap was cut back as a shelf for the 8-foot cap extension. The wood stringers were replaced by four 18-inch steel beams, and the planking was replaced by a 6-inch-thick reinforced-concrete deck with a 26-inch roadway, 18-inch curbs, and a concrete guardrail.

(Concluded on next page)

THE WILLIAMS TMDH HOLE DIGGER



Suitable for mounting on tractors whose engines develop 75 to 90 brake horsepower at operating r.p.m., and for holes up to 15 feet deep, in diameters through 72 inches.

The Williams TMDH Hole Digger is a big, fast and rugged machine for mounting on any make crawler tractor whose engine horsepower falls within the range specified above.

The Digger's kelly bar has two vertical speeds independent of auger rotation which are produced by hydraulic power from two pumps. A large pump for rapid in and out travel and a small pump for proper drilling speed. This arrangement leaves a maximum of engine horsepower available for auger rotation.

The Model TMDH Digger is designed for heavier duty performance with less maintenance and down time than has been available in tractor-mounted equipment heretofore.

HUGH B. WILLIAMS MFG. CO.
2946 Oak Lane • Dallas, Texas

NEW IMPROVED! CANCAP automatically protects tractor exhaust systems from damaging rain, sleet and snow . . .

New Wider Opening Action Allows Unrestricted Exhaust Gas Escape.

Lightweight Cast Aluminum Cap Opens with First Puff Of Exhaust.

New, Long Wearing Malleable Iron Hinge Insert Built Right Into Lightweight Cast Aluminum Cap.

Cadmium Plated Locking Screw With Shakeproof Washer Insures Longer Life.

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At Dealers Or Order Direct From
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makers of the CANTON TENSION PULL LOAD BINDER

3 SIZES TO FIT ALL EXHAUST PIPES FROM 1¾" TO 5" O.D.
NO. 2 CANCAP —fits all exhaust pipes from 1¾" to 2½" $1.90 ea
NO. 3 CANCAP 2½" to 3½" $2.25 ea
NO. 4 CANCAP 3½" to 4¼" $2.75 ea
NO. 5 CANCAP 4¼" to 5" $2.75 ea
NO. 5-3 CANCAP —fits John Deere A, B, D, G, M, R tractors $1.90 ea

HOTTER, LIGHTER, CHEAPER

PORTABLE HEAT

500,000 BTU's

SAFE, completely portable. For winter time construction heating, drying, thawing, warm equipment up. Utility model 150 lbs. $198.50 fob Denver.

INSTANT, ON-THE-SPOT HEAT

CHINOOK WIND® Deluxe includes single and double duct adaptors. Heavy duty canvas duct, 12" dia., 12' or 24' lengths. Deluxe Model: 175 lbs., $249.50 fob Denver (less duct).

Ratings established by leading research institute. Known in Canada as IMCO portable heater. Pat. Pending. Cable Code IMCO.

SAFE, CLEAN, LP GAS FIRED
Fume-free, no carbon monoxide. Economical to operate, practically maintenance free.

Fully Guaranteed

INTERNATIONAL MANUFACTURING CO.
4429 S. Delaware (Sold thru leading distributors, U.S., Alaska & Canada) Denver, Colo.

Traffic Keeps Rolling As Bridge Is Rebuilt

(Continued from preceding page)

Because of some slight deterioration at the water line, the old piles were encased with concrete 2 feet above and 2 feet below water. The 2-foot 4-inch-diameter sheath will prevent further disintegration.

The new 212-foot swing span was built on the same point as the old span by enlarging the pivot pier. A cluster of twenty-one 18-inch timber piles were driven around the old pier to provide a diameter of 30½ feet. Then, a new 6½-foot concrete cap was poured on top.

The through-truss swing span consists of two trusses 31½ feet apart. The 3-inch steel-grid floor is filled with concrete. When open, the swing span will give an 80-foot clearance.

Construction Procedure

Bowers' first job was to precast the concrete piles (See C&E, Dec. 1951, page 26), and drive them along the outside of the bridge from a floating rig. Next, the contractor built a temporary detour bridge about 210 feet downstream to bypass traffic while the new swing span was being built. The detour consisted of an 18-foot-wide wooden deck trestle tied in to the main bridge about 350 feet beyond each end of the swing span. The old 200-foot span was then floated down to the detour to act as a temporary draw span.

As the new swing span was being built, the contractor began ripping up 300 to 500-foot sections of the downstream half of the timber deck. This method was necessary so that traffic could move over the single lane opposite the ripped-up area. But single-lane traffic required rigid control to prevent long lines of waiting cars from forming on the bridge.

Bowers set up a 2-story tower at the middle of the bridge in which men were kept on duty 24 hours a day controlling traffic lights at each of the 500-foot construction areas. At the ends of the bridge, too far away from the control tower for manual control, automatic traffic lights were used.

Ripping Device

Timber planks were ripped up with a Bucyrus-Erie 10B crane using a special contractor's device. Bowers welded a number of 6-inch steel H-sections into a triple hairpin which could rip up over 10 planks from the stringers at one time. When tipped, the hairpin dropped its load of timber into a waiting truck.

Concrete was batched on shore and transported to the site in two Jaeger and two Smith transit-mix trucks. Where direct distribution of the concrete was not feasible, two Gar-Bro Power-Carts were used to haul and dump the mix.

On the concrete pile-encasing work, the contractor used a tapered metal cofferdam to seal out water while the pile was cleaned and prepared for pouring. After cleaning, the old pile was fitted with a metal form, wire mesh reinforcing installed, and concrete chuted in from above.

When the center span and adjoining deck sections were completed, the temporary bypass trestle was dismantled with a barge-mounted P&H crane. The old swing span was dismantled and then hauled away to a bridge-maintenance yard to be stored for eventual re-use.

Personnel

F. W. Dickinson was project manager for Bowers Construction Co. To secure the resident engineer most familiar with the project, the Department appointed R. R. Roper, who had directed the building of the original bridge 26 years ago. W. H. Rogers, Jr., is State Highway Engineer for the North Carolina State Highway and Public Works Commission.

NRMCA Publishes Booklet

The National Ready Mixed Concrete Association has published a revised edition of "Control of Quality of Ready-Mixed Concrete", a bulletin first published in 1944, designed to furnish information of interest to users and producers of ready-mixed concrete.

Some of the topics covered in the booklet include materials, proportioning concrete, inspection and maintenance of equipment, cold weather concrete, admixtures, and batching, mixing, and discharge control. Five appendices complete the booklet.

The pamphlet may be had for 75 cents by writing to the National Ready Mixed Concrete Association, 1325 E. St., N. W., Washington 4, D. C.

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at lower cost

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POWER HYDRAULICS FOR SNOW PLOWS

Specify MONARCH CONTROLS for new or existing snow plow equipment

- Type H.E.P. "Dynamight" Electric Power Control
- Fits all trucks
- Available for 6 or 12-volt systems
- Fan Belt Driven Models also available
- *Write Hydraulic Division*

MONARCH ROAD MACH. CO.

324 North Front Ave., Grand Rapids 4, Mich.

Tubular Steel Scaffolds

■ New literature is available on the tubular steel scaffolds made by the Advance Scaffold Division, Beaver Art Metal Corp., Ellwood City, Pa. The Advance tubular steel scaffold line ineludes a variety of panel styles and brace sizes. The panel assortment consists of 15 different load-bearing units ranging from 2 to 6½ feet in height. Both conventional and walk-through styles may be obtained in the ladder design.

The folder contains a description of the special panel and brace assembly used. Self-contained cam and stack locks are said to speed up assembly and dismantling through the elimination of bolts, nuts, and clamps.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 720.

The new Type 44 Lima unit.

Shovel Unit Converts Into 25-Ton Crane

■ A new 1-cubic-yard shovel that converts to a 25-ton-capacity crane is announced by the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio. The Lima Type 44 is available with either crawler or rubber mountings.

As a shovel, the Type 44 is equipped with a 20-foot boom and an 18-foot dipper handle. Crane booms are available up to 100 feet long, less jib. Jibs come in 15, 20, and 25-foot sizes.

The crawler-truck frame consists of two structural H-beams welded integral with the side frames. The standard crawler is 12 feet 3 inches long and has 30-inch tread pads. A 15-foot-long crawler can be furnished for crane, dragline, or clamshell operations requiring greater bearing area.

The four front rollers are mounted in tandem on equalizer beams and the two rear rollers are on rigid supports. This arrangement provides for a more equal distribution of weight on a larger area of the twin roller paths. The main machinery and power-plant well are to the rear of the center line of rotation for maximum counterbalance. A torque converter is available for the machine.

For further information write to the company, or use the Request Card at page 18. Circle No. 708.

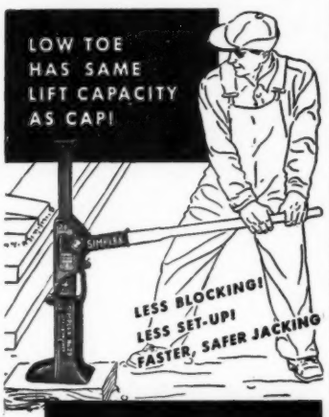
Materials Handling

■ New methods in bulk and packaged materials handling are described in the new brochure from the Tractor Division of the Allis-Chalmers Mfg. Co., Milwaukee, Wis. The booklet is illustrated with action shots of crawler and industrial wheel tractors, motor graders, and power units, plus detailed views of the rubber-tired earth-moving equipment recently added to the A-C line. Versatility and flexibility of the equipment in operation above or underground is emphasized by these on-the-job pictures.

Capacity, horsepower, weight, and other basic data on Allis-Chalmers equipment and necessary attachments is included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 696.

GET 19" LIFT from 2½" CLEARANCE!



SIMPLEX
RATCHET LOWERING
JACKS

Lift or Lower the Load Notch by Notch—cannot be Tripped.

With Simplex Ratchet Lowering Jacks minimum toe clearance is necessary. Loads are usually lifted from the ground to the toe of the jack by pinch bars or wedges. Only Simplex Jacks provide equal lift capacity on toe or cap. No other jacks offer such a combination of low cost and all-purpose utility. In fast jacking action—extra-safety features—and rugged strength for longer life, Simplex Ratchet Lowering Jacks give you more for your money! Available in capacities of 1½ to 35 tons. Write today for Bulletin: Industrial 49.

SAFETY SUGGESTION—Use thin wood block—Don't lift or lower steel against steel.

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JACKSON ANNOUNCES NEW SELF-LUBRICATING WHEELBARROWS

MODEL M11-24
Contractors Barrow

Now you can save money. Use a Jackson Self-Lubricating heavy duty barrow. They cost less, wear longer and absorb the shock load better.

Model M11-24B (Roller Bearing) still available.

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Oldest and largest wheelbarrow maker in America

"THIS LUBRICANT CUT OVERHAULS IN HALF"
—says WESTERN AUTO TRANSPORTS, INC.

"Operating over 200 tractors and 200 trailers from Detroit to the West Coast, we encounter temperatures from 120° above across the desert to 40° below in the mountains of Colorado. We have found that with LUBRIPLATE our wheel bearing packing mileage has tripled. Since using Lubriplate A.P.G.-90 in our transmissions and differentials, we are getting double the mileage between their overhauls."

For nearest LUBRIPLATE distributor, see Classified Telephone Directory. Send for free 56-page "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

Wheel-Type Tractors Get Diesel Power

■ Improvements and a wider selection of optional equipment for the Minneapolis-Moline wheel tractors have been announced. A new 283-cubic-inch diesel has been recently introduced for the UTIL line of tractors. The diesel, which is interchangeable with a gasoline engine, has a Bosch single-plunger injection pump and a three-stage fuel filter.

The improved hydraulic steering equipment has a control valve in the drag link to permit mechanical steering in the event of hydraulic failure, and a relief valve in the pump to eliminate high back pressure when wheels are turned to the limit.

Among other improvements are 6.35:1 compression ratio on the high-turbulence gasoline engine for 57 engine bhp at 1,300 rpm.

Front wheel tread is increased 4 inches for greater stability. New tire sizes include 10:00 x 20 fronts and 15 x 26 rears. Left and right wheel brakes can be controlled singly or together by pedal pads.

For further information write to the Minneapolis-Moline Co., P.O. Box 1050, Minneapolis 1, Minn., or use the Request Card at page 18. Circle No. 709.

A Minneapolis-Moline UTIL wheel tractor.

Flexhaust Is New Name

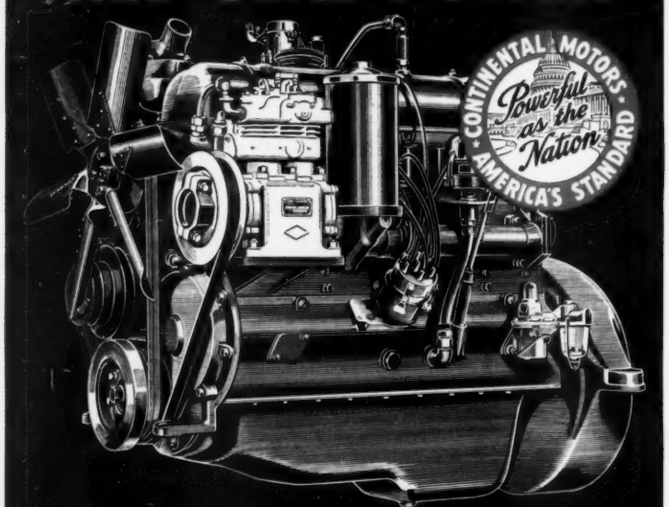
In order to better identify itself with its products, the American Ventilating Hose Co., New York, N. Y., a division of Callahan Zinc-Lead Co., has changed its name to The Flexhaust Co. The company makes Flexhaust, a spiral-wire reinforced hose; Portovent, a compressible hose; and Bloflex, a collapsible hose.

ENGINEERED TO OUT-PERFORM

. . . and BUILT TO LAST

CONTINENTAL

RED SEAL POWER



28 BASIC MODELS FOR TRUCKS AND BUSES

For more than 50 years, Continental has been engineering power plants to do more useful work per pound of engine weight, and building them to run longer with less time out for repairs. Materials flow more steadily and at lower ton-mile cost, when they move to the job in trucks with dependable Red Seal power. And the range of the Red Seal line—28 basic models, Diesel and gasoline—assures exactly the right engine for every commercial transport job.

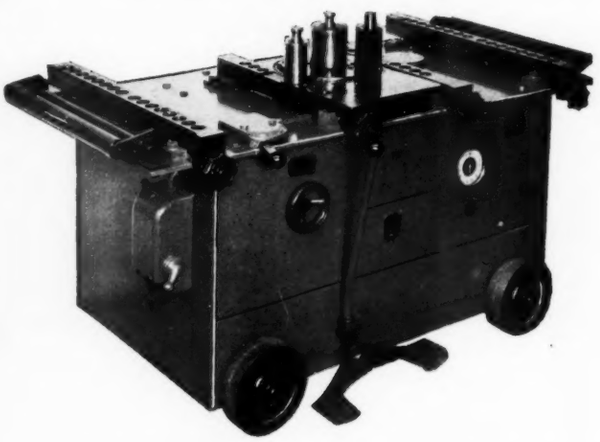
Continental air-cooled industrial engines, 2, 2½ and 3 h.p., are available in horizontal and vertical shaft types, for lawnmowers, garden tractors, pumps, and other applications. For information, address Air-Cooled Industrial Engine Division, 12800 Kercheval Avenue, Detroit 14, Michigan.

Continental Motors Corporation

MUSKEGON, MICHIGAN

Automatic . . .

Bar Bending Machine



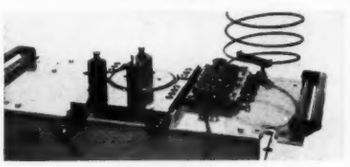
This new Bending Machine features all the latest improvements called for in modern fabricating methods. Right and left-hand bends can be made without additional adjustment by means of a single control lever.

The variable speed drive is easily adjustable to suit any thickness of material assuring high operating efficiency even when handling light stock.

Automatic stop and return control provides maximum safety and uniform work.

Special attachments permit the bending of hooks and angles on slab, truss or offset bars. Also will bend spirals, rings and curves of any diameter and pitch.

Stirrup Bend



Spiral Bend

Large Double Bend

Multiple Double Bend

KLINGELHOFER MACHINE TOOL CO.

INDUSTRIAL PARK, KENILWORTH, NEW JERSEY

New Cellular Concrete Can Be Nailed and Cut

■ A new cellular concrete material can be nailed, sawed, and cut like wood. The new material, offered by the Calsi-crete Corp., Saginaw, Mich., has insulating, load bearing, acoustical, and water-resisting qualities. It can be used for walls, roofs, partitions, and fire door cores. The firm reports that the material, a European development, costs less than conventional concrete.

Three types of the lightweight concrete are manufactured, each varying in strength and other characteristics. Calsi-crete with a bulk density of 40 to 55 pounds per cubic foot is of sufficient structural strength for most building needs. Material of this density is used for both inside and load bearing walls and facings, exposed or covered roof planks, and similar applications.

Calsi-crete can be sawed or cut with regular or carborundum saw.

For partitions, roof slabs, and such uses, the material is available with a bulk density of 30 to 40 pounds per cubic foot. A third type has a density of 15 to 30 pounds per cubic foot. The material is available in blocks of 16 x 8 inches x the required thickness.

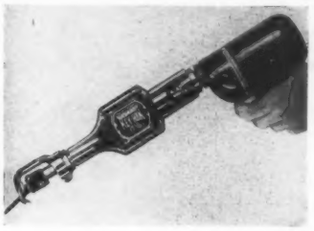
For further information write to the company, or use the Request Card at page 18. Circle No. 749.

Hacksaw Attachment Fits Power Drills

■ A hacksaw attachment that fits any heavy-duty ¼-inch electric or air drill or a motor-driven flexible shaft is offered by Producers & Distributors, Inc., 714 S. Sixth Street, Allentown, Pa. The Key-Hak is made to cut directly into 20-gage or lighter sheet metal as well as into wood of any thickness without the aid of a starting hole. The saw can also be used for cutting openings in corrugated metals.

Special saw blades are available for cutting stainless steel, monel, chromoloy, and chrome vanadium. Other blades for bronze, copper, aluminum, zinc, and lead are also available.

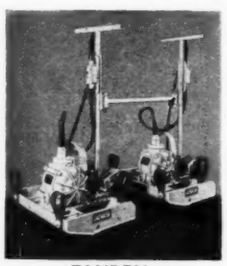
Scroll cuts as well as straight cuts can be made in a wide variety of building materials including wood, heavy Transite, Masonite, and gpysum block.



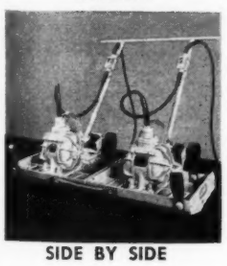
For further information write to the company, or use the Request Card at page 18. Circle No. 744.

JACKSON
TWIN-COMPACTOR UNITS

SPEED PROGRESS - CUT COSTS!



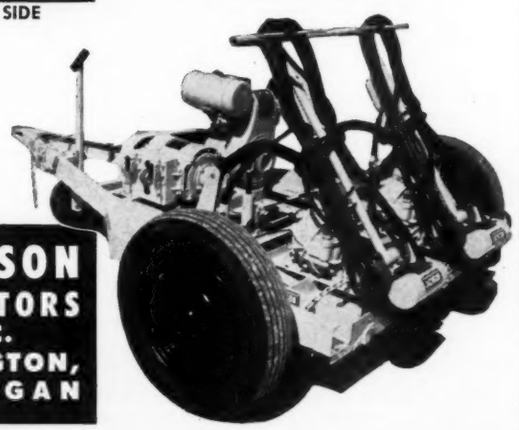
TANDEM



SIDE BY SIDE

The Jackson Vibratory Compactor, which has proved so exceedingly effective in blacktop pavement widening and patching, paving walks, drives, railway platforms and street crossings, as well as compacting granular soils and crushed rock in sub-bases, bridge approaches etc., is now available in TWIN-UNITS . . . for side-by-side or tandem operation. With either of these twin-unit hook-ups, since they are self-propelling, one operator, in most applications, can readily accomplish twice as much as with a single unit — thus speeding progress and halving labor costs. Compacting upwards of 4,000 sq. ft. per hour of bituminous mix close to maximum density is not at all uncommon. For maximum mobility and time-saving convenience an auto trailer with quick pick-up of the twin-unit and mounting a power plant of more than ample capacity, is also available. The Compactor, either single or twin-unit, can be used with great effectiveness in macadam construction for the odd work not done by the larger equipment. Get the complete facts, at once.

See your JACKSON distributor or write directly to us.



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Fieldmen prefer

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BRIGHTER
MORE DURABLE
EASY-TO-TIE

Flagging Tape

VISKON flagging tape stays bright, won't fade in any weather conditions. Available in brilliant red—orange—blue—yellow—and white. VISKON can be used wet or dry—doesn't "rope"—and does not become brittle in cold weather. Supplied on a handy core to loop right on your belt. Is non-toxic. Easy to write on. Standard put-up 1½ inches wide, 300 feet to a roll—other sizes available.

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P. O. BOX 72, North Little Rock, Ark.
Please send information on VISKON plus free sample swatch of each survey flagging tape color.

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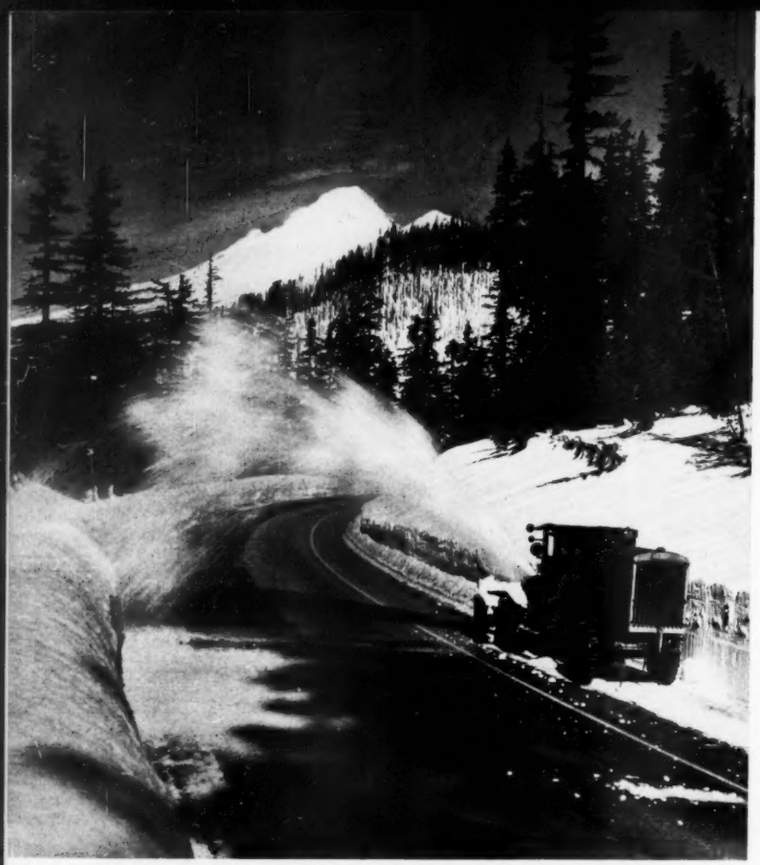


Snow removal equipment at work in Oregon's Mount Hood area. Oregon's snow removal program lasts from November almost until June. *Oregon State Highway Commission Photos*

Roads Cleared of Snow By Steady Plowing

Oregon maintenance crews battle winter effectively in well organized snow removal program

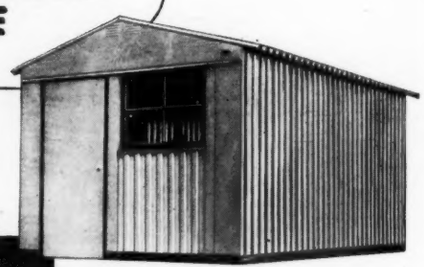
THE DAY OF THE HERO in snow-plowing is about over; it's the productive, trouble-free type of operation these days that pays off in any snow-removal program. Steady and considerate operation of snow-removal equipment is always better than flashy abuse that causes a machine to break down, and pulls other equipment and men out of the line to get it out of trouble.

The man who made these observations knows what he's talking about. He is E. A. Collier, maintenance and equipment engineer for the Oregon State Highway Commission, who, under the general supervision of State Highway Engineer R. H. Baldock, is responsible for keeping traffic in motion on the 7,200 miles of Oregon's state highway system. Collier has been at his job in one form or another for over 30 years.

Heavy snowplowing on 3,000 miles of the state highway system each winter has given Collier a keen appreciation of snow removal and its relation to general highway maintenance.

The ever-increasing demand for highways that will carry traffic at all times and in all types of weather has helped develop Oregon's interest in snow work. It is cus-

EVERY CONSTRUCTION JOB CAN USE ONE



USF Handy-Hut

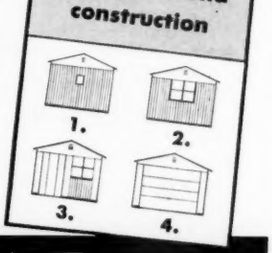
FRONT

✓ PORTABLE
✓ EXPANDABLE
✓ FLEXIBLE IN DESIGN

This all steel "handy-hut" fills a thousand needs of contractors. Its formed steel frame is quickly bolted together and all siding and roofing panels attached by the famous USF "Clip and Wedge" method that requires no holes in sheets.

You get the weather-tight, vermin-proof, and fire proof advantages of a permanent building . . . yet this one is easily dismantled and 100% salvable. Sizes range from 10′ x 12′ to 10′ x 40′ with full 7′ head clearance. Your choice of four different end panels, windows in sides, and interior partitions, gives full flexibility of design.

Choose from 4 types of end construction



USF STEEL

UNITED STEEL FABRICATORS, INC.

WOOSTER, OHIO

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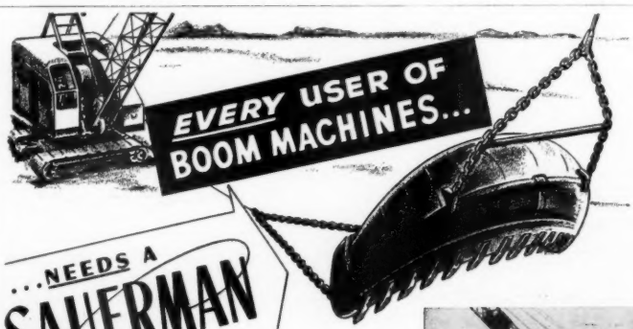


EVERY USER OF BOOM MACHINES...

...NEEDS A SAUERMAN Scraper!

Above, a 2½-cu. yd. Crescent scraper is used on a 1-cu. yd. boom dragline and the yardage rises to 270 cu. yd. per hour. The scraper is taking gravel from a roadside pit and delivering to a movable truck loader.

In this picture, a Crescent scraper hangs from a trolley that rides on a slack cable extending from the tip of the boom to an anchorage across the river. Thus, it is able to excavate far beyond the reach of the boom and haul material onto the bank.

A Sauerman Crescent Scraper will repay its moderate-initial cost many times over when added to your boom machine as auxiliary equipment. Simple to rig up, it increases the machine's capacity when used on specific job operations mentioned below.

For backfilling, grading and other jobs where material must be moved but not lifted, the scraper is simply cast from the boom tip. The Crescent bites into and gathers the load with the ease of a plowshare, then hauls at ground level and deposits the load automatically when the scraper is raised by the boom line. Machine strain and power consumption required to lift and swing the load to the discharge point are eliminated.

To dig material from a river, deep pit or soft area beyond the reach of the boom, another method is used to rig the Crescent Scraper to the boom machine. For such work the Crescent is suspended by chains from a simple trolley that rides on a track cable extending from the tip of the boom out to an anchorage. Digging, hauling and discharge proceed as in the casting operation. Following discharge, the empty scraper is lifted and gravity-returned to the excavation point merely by tightening the track cable.

Any boom machine will handle a Crescent of larger size than its regular dragline and clamshell bucket. The Crescent is much lighter, size for size, than these buckets. Digging power and strength are derived from the Crescent's bottomless construction and flowing lines—not from weight of metal. Users of boom machines can obtain full information by writing for illustrated literature describing how other operators use Sauerman Crescent Scrapers on their machines to increase output and reduce costs.

SAUERMAN BROS., Inc.

564 SOUTH CLINTON ST., CHICAGO 7, ILLINOIS

Cableway and Scraper Specialists Since 1909

A push plow moves into operation as a storm strikes. The machine builds up snow ridges along the shoulders, and rotaries follow to throw the snow off the highways.

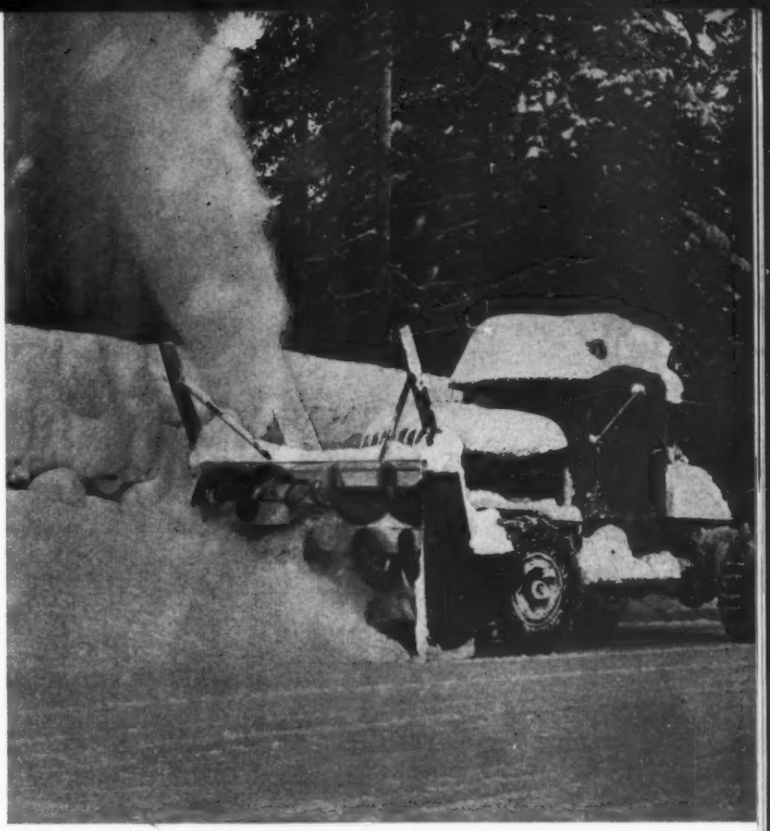
tomary for Oregon to spend approximately $1,000,000 annually for snowplowing and sanding in areas where icy conditions prevail.

It's a big, mechanized, far-flung operation.

Consider equipment, for example. In a typical winter season, Oregon crews operate 800 trucks, 429 blade plows, 12 V-type plows, 29 rotary snowplows, 50 diesel motor-graders, 13 bulldozers, 100 loaders, and 168 sand spreaders. In addition to this enormous equipment fleet there are all manner of small tools, flares, and other equipment used. The crew on the state's winter operation totals about 1,400 men. They not only plow snow, but they spread sand, remove slides and fallen trees, open drainage ways, repair bridges, maintain road surfaces, shoulders, signs, and signals, and flag traffic when highways are blocked by slides.

But the days of "heroic" work, when men labored endless hours at a time until they were ready to drop, is not for Oregon. Every man in the snow fight has standing orders from Collier to knock off after working a maximum of 12 hours, even if the road is blocked. Collier

(Continued on next page)

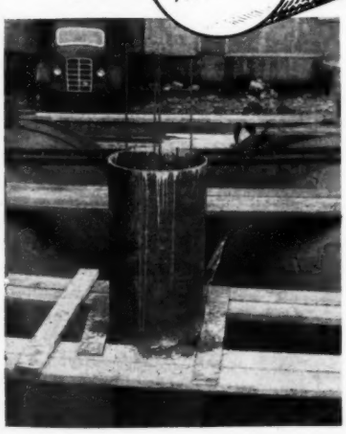


A high-capacity three-auger Snogo slices into a pile of snow. These units move large amounts of snow from Oregon highways and add flexibility to the snow removal organization.

Erect ROUND COLUMNS of CONCRETE IN HARD-TO-GET-TO PLACES

With **Sonotube®** PAT. APP. FOR.

LAMINATED FIBRE FORMS For One-Time-Use



And you'll save time and money, too! Lightweight, easy to handle SONOTUBE fibre forms enable you to erect concrete columns, piers, piles, underpinning, etc., in limited space. Low cost SONOTUBE requires minimum bracing and can be sawed to exact lengths on the job. Sizes 1" to 36" I.D., up to 24' long or longer on special order. Widely job-tested and approved. Complete technical data available upon request.

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QUICK CURE for concrete

FULCO COTTON CURING MATS

It took ten days, using the wet-burlap-wet-earth method to "set" concrete, but now concrete is "set" in 72 hours when Fulco Curing Mats are on the job. Not only do Fulco Mats speed up the job, the compressive strength of concrete is greater when these mats are used. Fulco Mats stay wetter longer and with less water; they insulate against sudden temperature change producing a more uniform job. Fulco Mats can be used over and over again, up to 75 times, making their cost per job negligible.

FULCO Mats are made of tough cotton, stitched edges and seams, filled with cotton padding weighing 12 oz. per sq. yd. A stitched 6 inch flap along the long side assures complete overlap from mat to mat.

Fulton also manufactures sturdy, durable Triple Strength Tarps, Drop Cloths and Tents — indispensable protection at low cost.

See Your Equipment Dealer or Contact Your Nearest Fulton Branch for details.

Fulton **BAG & COTTON MILLS**

Atlanta • St. Louis • Dallas • Denver • New Orleans • Minneapolis • Kansas City, Kans. • Los Angeles • New York City • San Francisco • Phoenix • Winter Haven, Fla.

A rotary Snogo works steadily and carefully, clearing the road of piles of snow built up by push plows. Here, the highway is safe and open to traffic, despite the heavy snow.

Roads Cleared of Snow By Steady Plowing

(Continued from preceding page)

knows from long experience that when a man works over 12 hours without rest, an accident and possibly an equipment breakdown is in the cards. His crews are stationed and assigned so that there is seldom any need for crews to work more than a normal number of hours. During heavy snowstorms, crews work around the clock, but they do it in shifts. Like all good snow removal men, they begin work when the storm starts, and they don't stop until the pavement is bare.

This policy was partly conceived because Oregon does not have a small snow removal program. Snow is with Oregon motorists from November until May, and snow removal has to go on during that time. Oregon hasn't spare machines or men to waste, so when a unit breaks down another machine is pulled off a less important road to fill in on the job until the disabled machine is fixed. In the meantime, the lesser job has probably become more important or the road has been blocked altogether. Then, schedules are disrupted for days. Snow removal is brutal work in which machine breakdowns can be expected, but Collier believes firmly that more than half the serious breakdowns can be prevented by careful operation.

Big System: Changing Conditions

Oregon, like Washington and northern California, is split down the middle, north to south, by the lofty Cascade mountain range. On the west slope of the Cascades, a heavy wet snow is usual. On the east side, snowfall is lighter, both in volume and specific gravity, and there the snow removal crews fight high winds and severe drifting conditions. Last winter, for example, the area around Baker had 60-mph blizzard winds and drifting snow. That was on U. S. 30, one of the main transcontinental east-west routes.

Conditions on other parts of the highway system can change dramatically. On U. S. 30 in the Columbia River gorge, Oregon's maintenance men fight a tricky "tapioca buckshot" condition, which has become rather famous as the *ne plus ultra* in snow removal difficulty. The condition is created by snow falling on the steep gorge walls and invariably crusting over, becoming hard and impervious. Sleet storms, typical of the area, then drop fine buckshot-like particles over the snow crust. These particles, unstable after they are built up, often break out and cause huge drifts and slides onto the road and railroad below.

Motorists scream their heads off today if that highway is blocked for more than just a few hours at a time, but Collier can recall a buckshot storm back in 1921—when he was a youngster with the Oregon department—when "tapioca" blocked a road from November 18 until well into April. At that time, a big slide threw drifts 20 feet deep over miles of the road. Collier recalls how he made an inspection trip on snowshoes, sat down on the top of a telephone pole, and was unable to see another pole in sight for eight pole lengths.

This buckshot condition, prevalent from Troutdale to The Dalles, is solved today with the superior performance and production of modern snow removal equipment.

The Oregon highway system covers high, forested mountains, crosses rivers, and stretches for miles in the eastern part of the state across flat, high, plateau land. The snow removal task is particularly important to Oregon's agricultural and forest lands, since winter movement of produce forms the largest portion of the heavy traffic. Strangely enough, nature is aiding the snow fight. In past geological ages, active volcanoes deposited huge amounts of volcanic cinders in the

the PFAFF & KENDALL story in Levittown, Pa.

20 ft. pedestal type standard with special P & K tapered lighting arm used for the first time. At Levittown, Pa.

Levittown, Pa. is a very *special* town in many ways! It is completely pre-planned for 16,000 homes to be ready in December 1954 . . . together with churches, schools, shopping centers and playgrounds so vital to the residents of what will be Pennsylvania's 10th largest city!

Street lighting will be really something to see . . . *and see by!* Underground wiring . . . anti-glare reflectors . . . photo-electric cell relays to turn lights on and off with sunset and sunrise . . . *and more than 3,000 PFAFF & KENDALL All-Aluminum Standards and Brackets* to carry more than 650,000 candlepower of light! Arterial highways will get similar lighting treatment.

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- *Much lighter weight* for low installation cost
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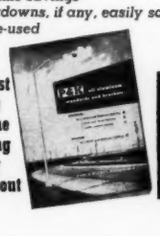

Write for Latest P & K Catalog . . . and Use the P & K Planning and Advisory Services without Obligation.

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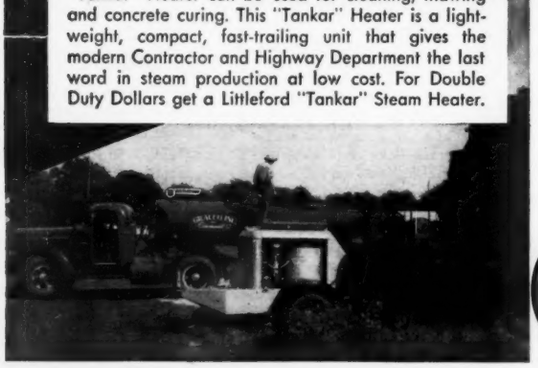
WANT DOUBLE DUTY DOLLARS?

THEN YOU NEED A **"TANKAR" STEAM HEATER**

If you want to stretch that construction dollar the "Tankar" Steam Heater will do it. This unit cuts at least ⅓ the time necessary to heat tank cars for unloading Asphalt, Tar, Emulsions or Road Oil. In addition to saving time in operation the "Tankar" Steam Heater saves time in getting under way, as it produces steam in 2 minutes from a cold start, gives steam at any predetermined pressure from 75 to 200 lbs. The "Tankar" Steam Heater is completely automatic, operates without interruption and without a steam engineer. In addition to unloading tank cars the "Tankar" Heater can be used for cleaning, thawing and concrete curing. This "Tankar" Heater is a lightweight, compact, fast-trailing unit that gives the modern Contractor and Highway Department the last word in steam production at low cost. For Double Duty Dollars get a Littleford "Tankar" Steam Heater.

PRODUCES STEAM IN 2 MINUTES' TIME

MODEL 115



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BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1900

LITTLEFORD BROS., INC.
485 E. Pearl St., Cincinnati 2, Ohio

southeastern part of the state. Today, many of these cinder deposits are used to excellent advantage as maintenance men dig and spread the material to whip winter icing conditions.

Mechanical Organization

Looking at the whole problem with more than three decades of experience, Collier believes that successful snow removal today depends on two principal factors, equipment and organization.

No organization, however good, can do its best with poor equipment. And, conversely, it is a waste of taxpayer's highway funds to purchase good modern equipment and operate the machines with an organization less efficient than the best.

Oregon's snow removal, then, is so organized that a steady application of the best man power and equipment power is brought to bear on any snowfall. Scattered at strategic points over the state are 135 section crews, each under a section foreman, to take care of snow removal and other routine highway maintenance. There are 17 district maintenance superintendents located at several points, who supervise and correlate the work of the section crews. In addition to these routine crews, special snow removal camps are operated each winter in the most troublesome snow areas. There is a special crew at Cascade Locks, on U. S. 30, in the Columbia River gorge, to fight the "tapioca". Another is based at Government Camp, near Wapinitia Pass on State Short Route 50, east of Portland. At this camp are 40 men, 5 rotary snowplows, 8 big trucks, push or V-plows, and a number of smaller machines.

A 30-man crew with three rotaries and allied equipment is stationed on Oregon Highway 20, near Santiam Summitt. On State Route 58 near Willamette Pass, another 30-man crew with two rotaries and allied equipment do the work. Only three of Oregon's major highway passes are permitted to snow-in each winter. These are the Mount Hood Loop, MacKenzie Pass, and Diamond Lake Pass in the Crater Lake country. These passes traverse scenic recreational areas and are principally of transportation value to summer tourists. From about Thanksgiving to June 30, these passes remain closed by snow.

One of the new items of importance in the mechanized organization in Oregon is the use of the smaller rotary plows. Oregon happens to use Snogo almost exclusively, and it finds that the smaller units, which move considerable amounts of snow, add extreme mobility and flexibility to the snow removal organization. The smaller units have proved valuable under sudden drifting conditions in eastern Oregon where drifts are deep for short distances. Collier likes these units even better than V-plows for that work, although V's also are used to some extent. The principal work is done by a combination of push plows and rotaries, so that traffic can use the highway while it is being cleared.

The importance of such a mechanized organization system cannot be overstressed, Collier points out. To show that the job is a big one, he cites typical snow depths at Timberline Lodge, which show what an increasing problem snow removal has become. Last winter at Timberline Lodge, there were 75 inches of snow on the ground January 1, 122 inches February 1, 158 inches March 1, 187 inches April 1, and 245 inches April 15. The spring of 1953 followed an exceptionally easy winter, but on every major mountain pass, there was about as much snow May 1 as there was January 1. Timberline Lodge still had 184 inches of snow on May 1.

It's All Hard Work

A typical snow fight represents some of the hardest work done by highway maintenance men. It's considerably more dangerous than flagging oiling-job traffic in the summertime, and even more disagreeable than the worst task of all—burying a dead whale that's lain long enough to ripen. Collier sent Oregon's highway department photographer to get some snow pictures a year ago under actual blizzard conditions and, according to some of the maintenance men who were there, it was July before the photographer warmed up again.

When storms begin, truck mounted push plows move into operation. As these machines develop sizable snow ridges along the shoulders, rotaries throw that material far to the side. Many of the highways, particularly in high mountainous country, have limited snow-disposal areas, but in all modern construction during the last eight years, every effort has been made to flatten slopes and increase right-of-way to facilitate snow disposal.

Sometimes the unexpected happens and, in spite of all they can do, maintenance men have to watch a

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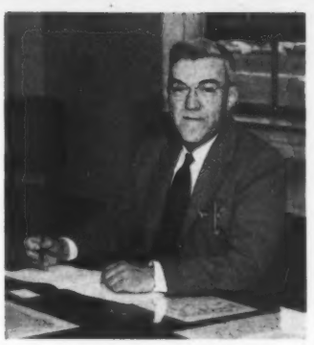


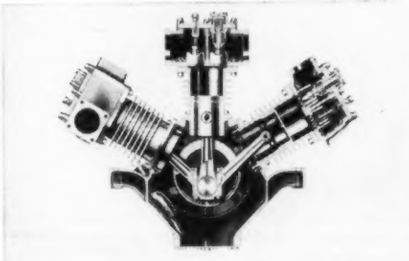
Heading Oregon's snow removal program is E. A. Collier, maintenance and equipment engineer for the State Highway Commission. *Ray Day Photo*

How long since you checked your compressor's fuel consumption?

These figures will show you how Worthington Blue Brutes may save you as much as 1500 gallons of fuel during an average operating year

COMPRESSOR SIZE	ENGINE TYPE	GALLONS OF FUEL PER HOUR AT 80 PSI	GALLONS OF FUEL PER HOUR AT 100 PSI
60'	GASOLINE	1.31	1.42
105'	GASOLINE	2.16	2.35
	DIESEL	1.66	1.73
160'	GASOLINE	3.18	3.44
	DIESEL	2.45	2.60
210'	GASOLINE	4.32	4.70
	DIESEL	2.89	3.06
315'	GASOLINE	6.25	6.75
	DIESEL	4.38	4.64
600'	DIESEL	6.30	9.20

HOW DOES YOUR COMPRESSOR STACK UP in comparison with the Blue Brute for fuel economy? The figures shown have been determined under normal field operating conditions.



"SURE ARE EASY TO SERVICE." That's what we hear about Blue Brutes from mechanics all over the country No special tools or complicated disassembly procedures are needed. And compressor uses same oil as engine

PLENTY OF RESERVE HORSEPOWER is standard with the Blue Brutes It takes thousands of hours of normal operation before engine wear affects the compressor's output This means you get full-rated output even though the engine hasn't been in the shop for a long time

Get the rest of the Blue Brute story from your nearest Worthington distributor Or write to Worthington Corporation, Construction Equipment Division, Section H 3 5, Plainfield, N J

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Roads Cleared of Snow By Steady Plowing

(Continued from preceding page)

snow pack build up. In spite of this, their plowing equipment works on. When the storm is over, motor-graders, some with 4-wheel drive and 4-wheel steer, move into action with special serrated cutting edges of steel on their grader blades. A straight blade, however sharp, is not as effective on a snow cake as these serrated edges which cut the solid material away very nicely. As the crusty material is shaved away, the blade pushes it off to the side. By staying with the crusting condition in this way, maintenance men help prevent hazards and accidents if big chunks of ice were loosened by a sudden thaw.

Oregon's men are also getting away from the old method of piling sand and cinders in stockpiles for winter use. When the old-time stockpiles were needed, they were invariably covered by snow, so that loading the material resembled a mining operation. Under Collier's direction, five 3,000-cubic-yard covered sand bunkers have been built at each of the worst snow points so that dry sand can be hauled from these bunkers as needed.

For its sanding operation, Oregon has thirteen 9-cubic-yard Baughman sand spreaders and many smaller truck-attached spreading devices. Even the sand loading is mechanical. Tractor-mounted front-end loaders are used to transfer sand from storage to the spreaders.

The big rotaries, of course, are the last word in modern snow removal equipment. All the units are mounted on heavy trucks, having 4-wheel drive and positive steering features. Some of them, through complex reduction gears, give an operator as many as 23 forward speeds. And every operator has standing orders, if snowbanks begin bearing down or crowding in, to ease up rather than press down on his throttle.

Collier has held his idea about equipment abuse for a long time. When he was a young man, he had a 2-yard barge-mounted dredge, and often took dredging and levee construction jobs. Even in those days, he was more interested in the steady, trouble-free operation of the rig than he was in what was piled on the bank. He has held that view ever since. Just recently, when a new maintenance foreman took a small hot plant and patching crew out for the first time, Collier said, "I don't worry about big production this first year, strange as it may sound to you. I want you to concentrate on running your equipment carefully, so that you can avoid breakdowns. And I want you to put on patches that will stay."

Radio Invaluable

The radio has been invaluable in Oregon's snow fight. It permits a maintenance foreman to keep in touch with headquarters and his spread, and change it with changing conditions. There are 33 base stations, and 150 mobile units in the state. At snow-crew level, rotaries, pickup trucks, and maintenance superintendent's automobiles are radio-equipped, so that extra help and equipment can be called for if necessary. The radio system also helps in other ways. Radio reports of road and weather conditions are sent from the field to the Salem office where a report, Monday through Friday, and a report covering 44 locations is issued for general release at 9 a. m. Particular attention is given to mountain summits. The radio is jointly operated by the State Highway and State Patrol Departments, and the network has been invaluable in emergencies such as storms, slides, forest fires, wrecks, and floods, because it keeps headquarters in close contact with field conditions.

Worst Problem: The Motorist

The worst headache for a snow removal man is still John Q. Motorist. Last year, in spite of the flashing blue lights, which are standard equipment on all U. S. snow removal units, motorists succeeded in piling automobiles into snow removal equipment a number of times. Fast operation, especially over caked snow sections and cuts, more than once brought automobiles to a sliding halt against the snowbank, usually without too much damage being done. But there were other cases when cars slid into opposing traffic, meeting other cars head-on.

Motorists still persist in driving too fast in heavy snow. If a highway is iced or snowed in, they often speed, perhaps believing that will get them through the danger faster.

Some of the big trucking concerns, more aware of their responsibility than many motorists, have recently installed sanding equipment on their large trucks. Its use often cuts down hazards on icy roads.

But John Q. Motorist! He's still a problem. During a recent blockade in the Siskiyous, it took four hours to get the traffic off the road and one hour to remove the snow. All of which would seem point to the reasonable conclusion that modern snow crews and their equipment are in better shape than the judgment of the average motorist who pays for the work they do.

CP Makes Purchase

Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y., has acquired the assets of The Jacobs Mfg. Co. of West Hartford, Conn., manufacturer of Jacobs chucks.

The sale does not affect manufacturing and sales operations, which will be carried on by The Jacobs Mfg. Co., as a subsidiary of Chicago Pneumatic Tool Co.

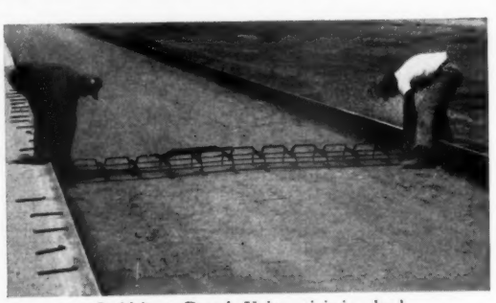
New Idlewild Taxiway Carries Lots of Weight

New taxiway at Idlewild is designed to carry heavy planes like this BOAC Stratocruiser. The taxiway is 6000 ft long and 100 ft wide

Giant superliners, bound for points overseas, are now using new taxiway T27 at New York International Airport, at Idlewild. This mile-long strip, containing more than 23,000 cu yds of concrete, is 13 in. thick and supports a 300,000-lb plane equipped with two sets of dual wheels.

Located at the south end of Idlewild, taxiway T27 was designed to carry heavy Constellations, Stratocruisers and other big planes between international runways and the loading stations. Bethlehem Dowel Units, of the same type that were selected for the original runways and taxiways at Idlewild, were used in the construction of this new taxiway.

Minimizing load-transfer problems caused by heavy wheel loads, Bethlehem Dowel Units transfer the weight of the plane from one side of the joint to the other, while offering minimum restraint to the movement of the slab due to expansion or contraction. The units hold the dowels in accurate alignment at all times, permitting free dowel movement in the concrete.



Bethlehem Dowel Units minimize load-transfer and expansion-contraction problems.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

BETHLEHEM REINFORCING STEELS

Wheel Pipe-Cutters

■ A new line of wheel-type pipe-cutters is made by Beaver Pipe Tools, Inc., Warren, Ohio. The new tool line is available in sizes for ⅛ to 2-inch pipe and 2 to 4-inch pipe.

The manufacturer states that changes in the cutting design permit power to be applied directly to the cutter wheel, so that there is no wasted pressure or effort. The cutter wheel, being close to the slide track of the guide block, cuts down slide-block wobble.

For further information write to the company, or use the Request Card at page 18. Circle No. 755.

Booklet on Electrodes

■ A booklet on a variety of electrodes is available from Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y. It contains information on over 30 different electrodes —stainless, mild, and high-tensile steel; cast iron; non-ferrous; low hydrogen, and hardfacing. There are details of chemical analysis and instructions for welding and application.

Other sections in the booklet discuss picking the right electrode, and the mechanical properties and testing of electrodes.

Form ADC 650 may be obtained by writing to the company, or use the Request Card at page 18. Circle No. 826.

Revised NYU Program

New York University's Division of General Education has announced a revised program of fall term courses in architecture, building construction, and the mechanical equipment of buildings.

The adult evening-study unit, beginning in September and ending in January, will give a dozen 15-week courses for draftsmen, designers, architects, building-construction superintendents, and other persons working in construction. Some of the subjects include building codes, heating, air conditioning, zoning laws, structural principles, and architectural drawing.

Roller-Chain Sprockets

■ A line of roller-chain sprocket wheels with taper lock bushings has been announced by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill. The manufacturer states that these stock sizes of sprocket wheels can be securely mounted on a shaft without reboring. The taper lock bushing makes for a tight fit within the range of normal shafting tolerances.

Set screws force and hold the split tapered bushing in the tapered bore of the sprocket wheel, causing it to lock onto the shaft. The full length of the bushing supports the sprocket on the shaft.

The sprocket wheels with taper lock bushings are available for ½, ⅝, ¾, 1, and 1¼-inch pitch single-width chains.

For further information write to the company and request Book 2449, or use the Request Card at page 18. Circle No. 705.

Data on Waterproofing

■ New literature is available on an inorganic water repellent for brick, concrete, sandstone, stucco, asbestos cement combinations, cement base paints, and other composition surfaces. The product, Flexseal, is made by the Flexrock Co., 364 Cuthbert St., Philadelphia 1, Pa.

According to the manufacturer, the water-proofing agent penetrates masonry up to ¼ inch deep, lining each particle of the masonry with silicone resins.

Flexseal is said to be invisible upon drying. It can be applied in summer or winter and in temperature as low as 15 degrees F on any wall whose surface is dry.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 827.

Photo Courtesy Mixermobile Manufacturers, Portland, Oregon

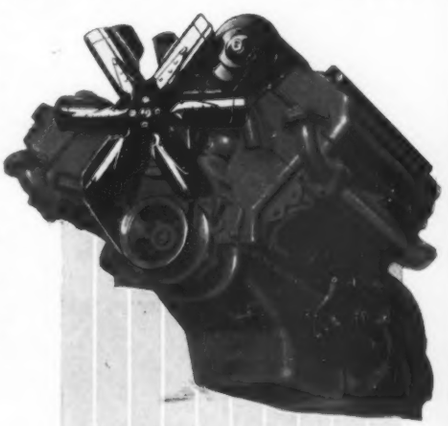
180 horsepowered Scoopmobile loads 4319 yards of wet sand in 31 hours!

No stranger to hard work, this loader. Each time it bends down, a hydraulically operated loading bucket picks up, carries and loads as much as two cubic yards of dirt, rock or sand. Four-wheel planetary gear drive and four-wheel power steering are combined for plenty of power, amazing speed and maneuverability. Five-speed transmission enables top performance under any conditions of terrain.

Like others, this manufacturer powers with Chrysler because he *knows* every Chrysler Engine is engineered for long-lived, top-profit performance. He selected the husky Model 20 Chrysler V-8 Industrial Engine. Result: *more* work in *less* time.

Chrysler can equip its 180 horsepower Model 20, or any of its Industrial Engines, to meet special requirements. For example, Chrysler can supply engines with propane or natural-gas burning carburetor, gyrol Fluid Coupling or torque converter.

Chrysler Industrial Power is not expensive. Production-line methods adapted to specialized engine building provide a custom-built engine at mass-production prices. See a Chrysler Industrial Engine Dealer or write: ***Department 89, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***



CHRYSLER
Industrial Engines
HORSEPOWER WITH A PEDIGREE

On the Fisher Creek bridge job near Beloit, Kans., Harry Henery, Inc., Ottawa, Kans., drove all piles for pier footings with this Byers Model 83 crane equipped with a 3,420-pound drop hammer. The creosoted wood piles were driven to a minimum 20-ton bearing. *Houck Photo*

Eight Bridges Needed in Road Relocation

An 18-mile stretch under five contracts also includes grading, base, and blacktop paving items

FIFTEEN SHARP TURNS in the 18 miles between Glasco and Beloit on U. S. 24 in Kansas will be eliminated with a wider highway in a new location, when the last 9-mile stretch between Asherville and Glasco is completed late this summer. The half between Asherville and Beloit has been completed and opened to traffic. Since the last half is a complete relocation, U. S. 24 traffic merely uses the old road.

The relocation, 24 feet wide in a 42-foot right-of-way, is a result of a top priority recommendation of the Fact Finding and Research Committee which made a study of Kansas roads in 1949, and will safely speed transcontinental traffic by elimination of a hazardous bottle neck.

Five Contractors

Five contractors have a part in the construction of the road. Their combined bids totaled $1,097,712. Eight bridges are included in the job, two of which are small reinforced-concrete box bridges, and there is a short but welcome by-pass at Beloit.

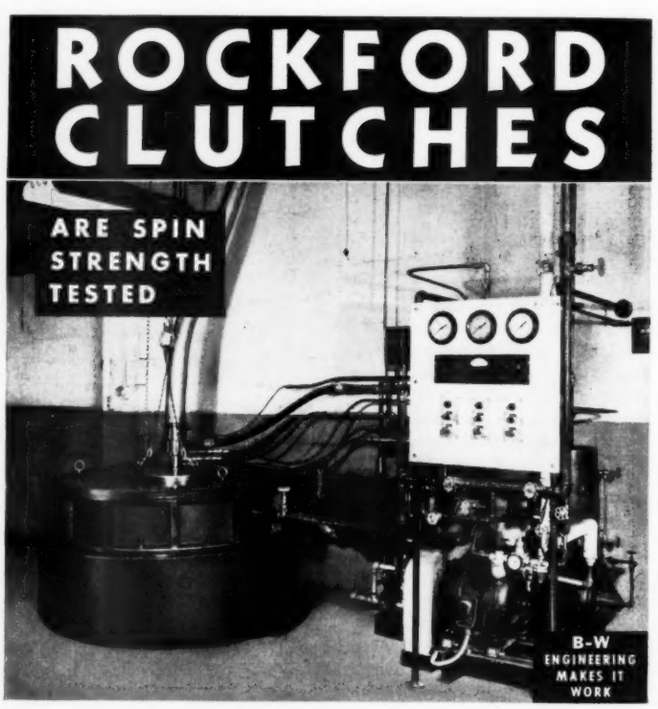
Adrian Schweitzer, Osborne, Kans., had the grading contract on the completed section at $100,332, which included grubbing of 1,000 linear feet of hedge, removal of 223 large trees, 398,000 cubic yards of dirt excavation, and 300 cubic yards of rock.

Two bridges, one 207 feet long and the other 185, were built by E. W. Geiger, Inc., Topeka, Kans., who has a similar contract on the uncompleted half. These were reinforced-concrete slab span structures, requiring 765 cubic yards of Class AAA concrete, 178,650 pounds of reinforcing steel, 2,560 linear feet of untreated timber piles, and 1,300 linear feet of treated timber piles. Combined cost was $86,231.

Erickson Construction Co., Assaria, Kans., built two reinforced box bridges, using 500 cubic yards of Class A concrete and 60,000 pounds of reinforcing steel for a combined cost of $26,783.

Sutton Nursery & Landscape Co., Inc., Independence, Kans., seeded the

5 TONS
500 TONS
"If yer lookin' fer a lift—see McKISSICK!"
McKISSICK BLOCKS
Give You The Lift You Need
Blocks especially designed to solve your lifting problems.
1 to 10 sheaves GUARANTEED to carry rated loads from 5 to 500 TONS!
Equipped with Johns-Manville klipper grease seals.
Above is a 10-sheave block, 500-ton capacity, 30" roller bearing sheaves, further proof that—
McKISSICK BUILDS A BETTER BLOCK FOR EVERY PURPOSE
McKISSICK
McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma


ROCKFORD CLUTCHES
ARE SPIN STRENGTH TESTED
B-W ENGINEERING MAKES IT WORK
To determine the bursting speed of ROCKFORD CLUTCHES, they are spun up to a high R.P.M. in this air turbine speed chamber. This test assures they will continue to perform efficiently at the speeds for which they were designed. Let ROCKFORD engineers devote the benefit of this and many other tests to your product's clutch design.
B-W PRODUCTION MAKES IT AVAILABLE
ROCKFORD CLUTCH DIVISION BORG-WARNER
314 Catherine Street, Rockford, Illinois, U.S.A.

Excavation and dirt-moving is done with Caterpillar tractors and scrapers. Here a D8 push-loads a DW10 combination. Steel sideboards add almost 2 yards to the 8-yard capacity.
Houck Photo

right-of-way with alfalfa, brome, yellow sweet clover, rye, and wheat grass under a $5,867 contract.

Present Activity

The eastern 9-mile strip between Asherville and Glasco is now under contract with three contractors at work. All but 2.6 miles of the new highway is in Cloud County. The remaining section is in Mitchell County.

E. W. Geiger, Inc., with a contract for grading consisting of 496,000 cubic yards of common excavation, moved in his equipment early in April and started dirt-moving near Asherville. Four DW10 Caterpillar tractors and matching DW10 scrapers were equipped with 10-inch welded-steel sideboards which increased the normal capacity from 8 to almost 10 cubic yards. Two D8's push-loaded and two sheepsfoot rollers were pulled by Case tractors. In the fleet was a 12-yard LeTourneau Carryall towed by a D7 Caterpillar. A Caterpillar No. 12 grader spread the loads.

Compaction was a steady shuttle for the two rollers. Lifts were specified for a maximum of 6 inches after compaction with a density equal or greater than 95 optimum, which was indicated when roller feet rode the surface.

Although Geiger was working only on dirt excavation when the job was visited in April by CONTRACTORS AND ENGINEERS, there were 1,230 cubic yards of rock in the contract as well as the grubbing of 5,000 linear feet of hedge and removal of 136 large trees. Concrete culverts required 1,700 cubic yards Class A concrete and 170,000 pounds reinforcing steel. Other drainage was provided with 2,000 linear feet of corrugated-steel pipe.

Bridge Jobs

Of four bridges, two went to Harry Henery, Inc., Ottawa, Kans., on a combined bid of $61,738 and two to Midwest Construction Co., Holton, Kans., on a combined bid of $19,139.

Henery's bridges include a 135-foot continuous reinforced-concrete girder with three spans at Fisher Creek near the eastern end of the job, and a 117-foot reinforced-concrete slab span over Lost Creek, both designed for H-20 S-16 loading. Class AAA concrete with a maximum of 5½ gallons of water to each sack of cement was used, thus furnishing a design strength of 4,250 psi.

Ralph W. Forkner, Henery superintendent, started the Fisher Creek bridge job on April 20, 1953, and drove piling for the two 40-foot and the one 54-foot spans with a Byers Model 83 equipped with a 3,420-pound drop hammer. Long-leaf pine pressure-creosoted piles were used for pier foundations, using twelve 60-foot, fourteen 34-foot, and fourteen 36-foot piles, all driven to a minimum 20-ton bearing. False work was carried on sixty 35-foot untreated piles.

Excavation for the pier pile caps was below creek-bed level and required pumping. For this purpose the contractor had on hand a 2-inch Rex, and 3-inch and 4-inch Construction Machinery Co.'s engine-driven centrifugal pumps.

(Concluded on next page)

So DIFFERENT... They're Patented!

Power Plus Anti-Rust Protection at No Extra Cost

Here are fuels so *different* they have been PATENTED—so *revolutionary* in action that they result in actual dollar savings for Sinclair users.

How? Sinclair fuels—and *only* Sinclair—contain the rust inhibitor RD-119®. This amazing chemical forms an invisible waterproof film throughout the equipment's fuel system—from fuel tank to combustion chamber. Used regularly in gasoline engines, Sinclair Gasoline with RD-119 *prevents* rust and corrosion—can save you costly repairs to carburetors and fuel pumps. Regular use of Sinclair Diesel Fuel containing RD-119 eliminates the problem of rust-clogged injectors.

Now, get *Full Power, High Anti-Knock* PLUS the *Anti-Rust Protection* of RD-119—exclusive with Sinclair... AT NO EXTRA COST! Phone your local Sinclair Representative today about Sinclair Anti-Rust Fuels.

Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.

Eight Bridges Needed In Road Relocation

(Continued from preceding page)

A Worthington 105 air compressor supplied air for air hammers and other air-operated equipment.

Concrete

The concrete plant is a Rex 11-M mixer with a 20-ton Binanbatch outfit. Materials are handled with a Ford tractor with front-end loader. Sand comes from Ross Sand Co., Concordia, Kans. Rock is CA-5 with 100 per cent passing 1-inch screen and comes from Quarzite Stone Co., Lincoln, Kans. Cement is Ash Grove.

Forms are made on the job with production sawing done on a Superior woodworker 8-inch power saw. Forms are framed with dimension lumber from 2x6 to 6x6 timbers and lined with plywood.

Typical Pier

Piers are post-type with legs resting on a reinforced-concrete footing 6 feet 11 inches wide, 8 feet long, and 2 feet 6 inches thick. Seven wood piles are driven for each footing with the head 12 inches in the concrete. Pier columns are 2 feet square and approximately 23 feet long.

Henery, who had the base course contract on the completed section, was also the successful bidder on the east half at $289,376. The 11-inch stabilized base with blacktop will require 63,000 tons of aggregate and 680,000 gallons of cutback asphalt.

Quantities and Personnel

Quantities include the following:

Excavation	496,000 cu. yds
Rock excavation	1,230 cu. yds.
Concrete, Class A	2,313 cu. yds.
Concrete, Class AAA	200 cu. yds.
Steel, reinforcing	322,000 cu. yds.
Aggregate	63,000 tons
Cutback asphalt	680,000 gals.
Treated timber piles	2,800 li. ft.

Gale Moss is director of the Kansas Highway Commission; R. C. Keeling, chief engineer; H. O. Reed, construction engineer; C. Frank Virr, division engineer, Second Division; W. D. Wollam, assistant division engineer for construction; W. D. Predmore, resident engineer.

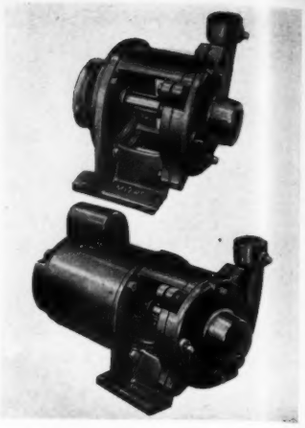
For the contractors, Lynn Snodderly, general superintendent, represented E. W. Geiger, Inc., and Lee Livengood was excavating foreman. Ralph W. Forkner represented Harry Henery, Inc., on Fisher Creek and Lost Creek bridges. Geiger had a crew of 20 and Henery a crew of 12 men on the bridges.

Catalog on Oil Filters

■ A line of oil filters is shown in literature available from W. G. B. Oil Clarifier, Inc., Kingston, N. Y. Clarifiers are illustrated for units up to 300-cubic-inch displacement for diesel and 400-cubic-inch displacement for gas engines. A multiple purpose filter for lube oil and fuel or cutting oils is shown. The booklet also illustrates replacement units with a 75-cubic-inch cartridge that can be used on cast base filters.

The material in the filter is a vegetable product said to remove all contaminants while leaving the additives and other ingredients essential to lubrication. The manufacturer points out that the element is deep so that the oil is clarified by passing through it rather than by being merely strained. The body contains an oil distributing support which maintains the cartridge at full size. A closely woven muslin cover prevents lint from entering the oil stream, and a fine mesh screen bottom permits the oil to enter but retains the filtering material.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 767.



Centrifugal Pump Line

■ A line of centrifugal pumps is introduced by The F. E. Myers & Bro. Co., 904 S. Orange St., Ashland, Ohio.

Available in ⅓, ½, ¾, and one-hp sizes, the Centri-thrift line may be had in either motor-mounted or belt-driven models powered by a 3,450-rpm capacitator-type motor. The pumps will develop heads up to 92 feet with capacities up to 50 gallons per minute.

Among its features are a corrosion-resistant stainless-steel pump shaft, a removable bronze-wearing ring, and a rotary seal.

For further information write to the company, or use the Request Card at page 18. Circle No. 816.

Athey Promotes Peterson

Eugene L. Peterson has been promoted to manager of advertising and sales development of Athey Products Corp., Chicago, Ill., manufacturer of construction and logging equipment.

In his new position, Mr. Peterson will be in charge of all advertising, including media, bulletin preparation, and preparation of movies. He joined Athey in 1952, after four years with the catalog preparation department of Sears Roebuck & Co.

Here's exactly what you need for quick, economical pavement repairs and small surfacing jobs . . . in any season . . . under wet or dry conditions. It's the McConnaughay HTD-B Mixer, precisely engineered and rigidly constructed to handle on-the-job mixtures of asphaltic concrete, sheet asphalt, sand asphalt or mastic asphalt . . . hot or cold . . . at remarkably high rates. It will enable you to meet all conditions with least effort and at lowest possible costs the year 'round. Write, wire or 'phone today for details and specifications.

No Other Machine Can Do ALL These Things!

Reactivate and heat stock pile mixture—up to 10 tons per hour.

Prepare cold asphaltic mixtures —up to 10 tons per hour.

Prepare hot asphaltic mixtures —up to 5 tons per hour.

Dry various types of wet aggregates quickly, thoroughly.

Remove both moisture and solvents from bituminous mixtures.

Produce bituminous mixtures with tars, paving asphalts, cut-back asphalts, and emulsified asphalts.

K. E. McCONNAUGHAY
LAFAYETTE 3, INDIANA

ARNOLD LUBRICATOR AUTOMATICALLY OILS AIR TOOLS

Thus cuts maintenance costs, reduces downtime, prolongs tool life

Oil flow from Arnold Lubricator starts when air tool starts, stops when tool stops, automatically lubricates all working parts. Oil flow easily adjusted to tool needs. Can be filled under line pressure; window tells you when.

Light weight. Easily installed in hose line or on bench. Streamlined to prevent catching. No moving parts to get out of order. 4 sizes. Order from your equipment dealer TODAY, or write us for leaflet and prices.

Dealer inquiries invited.

THE RUCKER COMPANY
15 4228 HOLLIS STREET • OAKLAND 8, CALIFORNIA

New Grader Attachment Cuts Shoulder Slope

■ A new side grader cuts slopes and shoulder lines while the motor grader stays on top of the road. The Grade-More slope grader has a 16-foot mold board suspended from the side of the motor grader. The mold board is controlled from the operator's seat through linkage to the regular grader controls.

According to the manufacturer, the blade may be set to build uniform slopes so that expensive corrections are avoided. The attachment simplifies lining up shoulders and gives an accurate grade line. It pulls old dirt or gravel up on the road top, leaving ditches free of loose material.

The mold board height is 18 inches and thickness is ½ inch. Lengths shorter than the standard 16 feet are also available.

New Grade-More attachment cuts a shoulder slope.

The slope grader is available for Caterpillar, Allis-Chalmers, and Adams motor graders.

For further information write to the Hasselbalch Fintzell Co., 215 N. 12th St., Omaha, Nebr., or use the Request Card at page 18. Circle No. 791.

Hydraulic Journal Jack

■ A new bulletin that gives details and specifications on a new 35-ton hydraulic jack is available from the Duff-Norton Mfg. Co., Preble Ave., Pittsburgh 30, Pa. Among features of the hydraulic jack is an automatic air vent said to eliminate 90 per cent of air-lock difficulty.

According to the company, the jack is 25 per cent lighter than other types with the same capacity because the vent design permits using a smaller reservoir. The air vent screw and adjustments are eliminated.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 799.

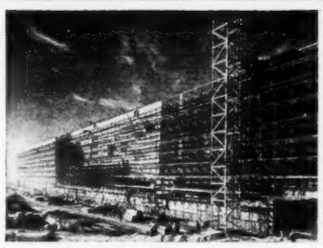
BUILD PROFITABLY and SAFELY with SAFWAY tubular steel scaffolding

IN THE LONG RUN Safway's exclusive design costs you less . . . creates greater overall profits. That's what thousands of contractors and industrial firms, painters and builders are saying today.

Safway's tubular welded frames, tubular cross braces, trouble-free wing nuts and studs give Safway scaffolding unusual strength and convenience for faster assembly.

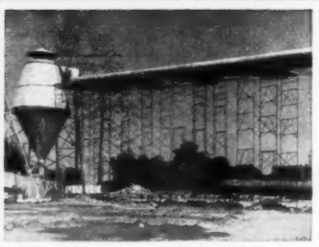
You can secure more facts by contacting one of the 137 Safway dealers near you. Or write for the fact-packed Safway bulletin. It's free.

Another Texas tall tale



It took just a year after breaking ground to deliver the first bomber at this Texas bomber plant. Miles of Safway scaffolding helped to speed the construction work.

Moving a dust collector

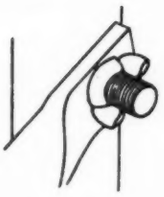


How would you move this dust collector when dumping space is filled? Easy! Support it with easy-to-assemble-and-dismantle Safway steel scaffolding.

Time-saver for home builders

Masons, carpenters, painters use safe, strong Safway scaffolding in home construction. Low in original cost, Safway's durable construction saves on long-run costs as well.

What's stronger than steel?

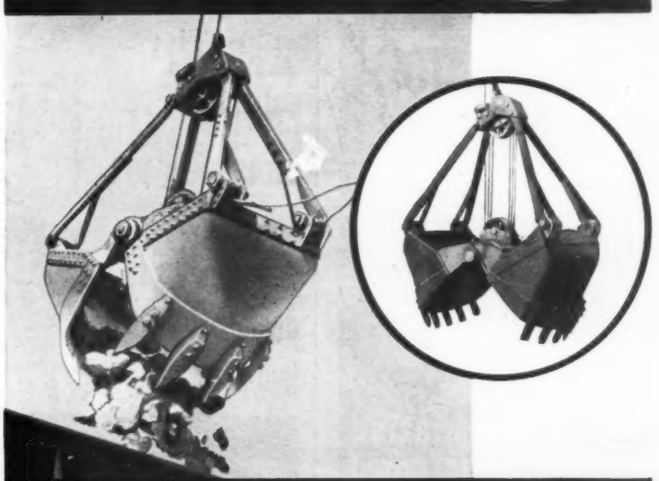


Trouble-free wing nuts solidly join tubular steel cross braces to end frames. Cross braces pivot on hardened-steel Hi-Shear rivets. All parts are corrosion and weather resistant.

SAFWAY STEEL PRODUCTS INCORPORATED
6240 West State St., MILWAUKEE 13, WIS.
Manufacturers of Tubular Steel Scaffolding and Equipment

RENTED and SOLD by distributors everywhere

Choose the OWEN ROUND NOSE for Rigorous Requirements

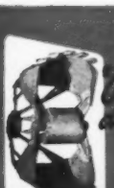


If you've had occasion to use a round-nose hand shovel you'll understand why—

An Owen Round-Nose Bucket is uncommonly efficient in handling rock and broken slag and in exceptionally hard excavating and dredging operations.

As compared to a straight-nose shovel, the round-nose penetrates hard earth more readily—"noses" its way into broken rock with less effort—and consistently comes up with a "bigger load." And like an egg it is stronger due to its curved surface.

In the Owen line is a bucket for every specialized and general digging and rehandling purpose.



"A mouthful at every bite"

BUCKETS AND GRAPPLES
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THE OWEN BUCKET CO.
5030 Breakwater Avenue • Cleveland, Ohio
Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

Fly Ash in Concrete

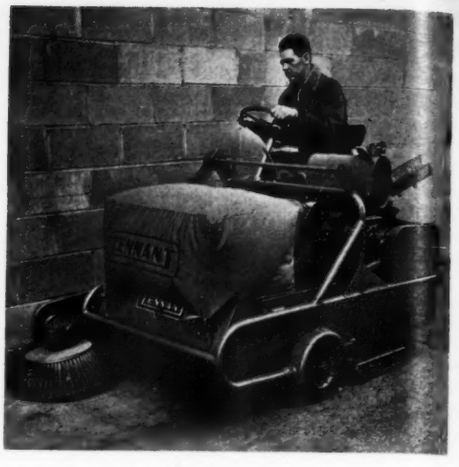
■ The advantages of using fly ash in concrete are outlined in a new booklet from Minmix Products, Inc., 30 Rockefeller Plaza, New York 20, N. Y. According to the booklet, New York City fly ash, high in silica and alumina and low in lime, when mixed with portland cement, combines with the hydrated lime liberated when the cement hydrates. It forms an insoluble cementitious compound and eliminates hydrated lime which contributes nothing to the concrete. Replacing 20 per cent of the portland cement with the fly ash will reduce the lime to a trace and increase the total useful cementitious compounds. This results in increased strength after the first days of curing.

Fly ash is the residue from burning pulverized coal in suspension. The fly ash is separated and collected from the gases of combustion after they leave the furnace.

The booklet reports that from 75 to 200 pounds of New York City fly ash per cubic yard of concrete have been used successfully. The booklet gives data showing the comparative compressive strength of straight portland cement concrete and concrete in which fly ash has replaced 20 per cent of the portland cement. Both mixes are designed to produce 3,000 pounds per square inch compressive strength in 38 days in accordance with the New York City code requirements for controlled concrete.

Also available are copies of the revised New York City Code on the use of fly ash in concrete.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 775.

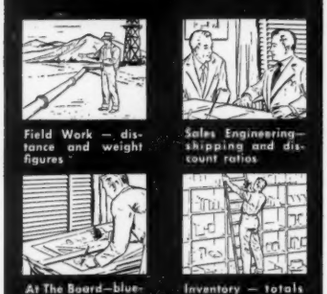


THIS NEW power sweeper has a capacity of over 100,000 square feet per hour in open areas, according to the G. H. Tennant Co., 2566 N. 2nd St., Minneapolis 11, Minn. It has a speed range of from 2 to 6 mph. A ratchet-type lever on the sweeper allows one man to dump 700-pound loads of debris in about 30 seconds. A 36-inch brush and 720-cfm fan pick up dirt, litter, and dust on the run. The sweeper drives like a car, turns in a 5-foot radius, and has forward-reverse control. For further information write to the company, or use the Request Card at page 18. Circle No. 801.

SLIDE RULE PORTABILITY!

CALCULATOR ACCURACY!

CURTA Calculating Machines--lowest priced complete calculators on the market.



Field Work — distance and weight figures

Sales Engineering—shipping and discount ratios

At The Board—blueprint specifications

Inventory — totals wherever you go

In a special shock-proof case, the Curta model II calculator weighs but 12 oz. Fits easily in brief-case, desk drawer, jacket pocket, or glove compartment.

Life-time anodized finish, engraved dials, arctic and tropic-proof all-metal construction.

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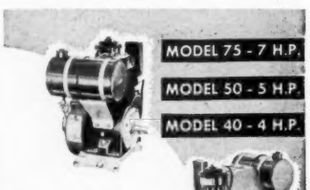
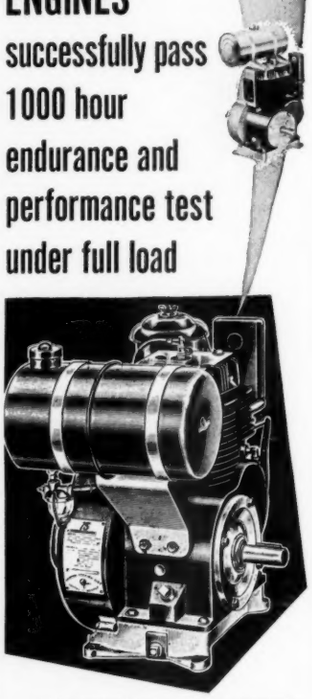


GLADDEN ENGINES successfully pass 1000 hour endurance and performance test under full load



This rugged test definitely separates "the men from the boys". It demands stamina, dependability, and consistent powerful operation from an engine. Operating under a full load Gladden Engines successfully performed day after day without failure.

On important construction jobs where full operating days mean the difference between profit and loss, it is important that dependable power be available at all times. Past on-the-job records prove that GLADDEN ENGINES will operate day after day under the severest operating conditions with consistent dependability.

For further information on the complete line of GLADDEN ENGINES, kindly write

GLADDEN PRODUCTS CORPORATION

635 W. Colorado Blvd., Glendale 4, Calif. Dept. 101

Compact Air Heater

■ A hot-air heater that weighs 114 pounds and produces 6,000 Btu per hour is available from the Perfection Stove Co., 7609 Platt Ave., Cleveland 4, Ohio. The Model E-600 heater is self-contained and includes a centrifugal pressure-type dual blower which separates the ventilating air from the combustion air while using only one motor. It can be operated from 110 volts ac or 24 volts dc and contains its own power rectifier. The compact heating plant may be used for standby, emergency, and spot and area heating.

According to the manufacturer, the heater can burn fuel oil and gasoline in temperatures as low as 70 degrees below zero. The unit has a fuel metering jet which maintains a steady flow regardless of temperature changes or viscosity of fuel.

Ignition is improved by a glow plug that vaporizes as well as ignites the fuel. A single operating switch provides manual high-low operation.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 804.

Anti-Stripping Additive

■ A new brochure discusses the problem of bond and stripping in bituminous paving. In combatting the problem, the booklet recommends the use of an additive, No-strip, made by Maguire Industries, Inc., 182-27 Liberty Ave., Jamaica 33, N. Y.

The text tells how to use the additive, which, according to the manufacturer, strengthens the bond and protects against moisture in both hot and cold laid plant mixtures.

Tables show its effectiveness with various types of aggregate. The manufacturer states that data in these tables was reported by the U. S. Public Roads Administration or were compiled under USPRA recommended testing procedures.

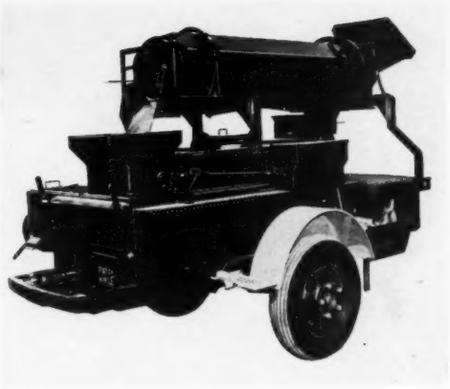
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 697.

Full Load...Accurate Dumping...Easy to Operate

The perfect weight distribution of Omaha Dragline Buckets gives a full load with every cast. The entire load is dumped quickly and accurately. Perfect balance makes it easier for operator to spot dump. For over 42 years experienced contractors have relied on Omaha for every Dragline need. Write for complete catalog giving specifications of 4 available types.

Of Course IT'S AN OMAHA DRAGLINE BUCKET

DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.



The mobile asphalt plant produced by Wylie Mfg. Co.

Mobile Asphalt Plant

■ A new portable hot-asphalt plant is announced by Wylie Mfg. Co., Box 7086, Oklahoma City 12, Okla. The Model PM 215 Patchmobile produces proportioned hot-patch material on the job for maintaining streets, highways, and airport runways, and will mix mastic material for floors and bridge decks.

The plant consists of a rotary dryer, asphalt tank, pugmill, power asphalt pump with spray attachment, volumetric asphalt measuring device, and asphalt tool-heating compartment. It is towed to the job by a truck which can also be used to haul sand and gravel for the mix.

No manual handling of aggregate and asphalt is necessary during the process of mixing the material in the Patchmobile. The aggregate is shoveled from the dump truck into the charging chute of the rotary dryer. As the dryer rotates, the material is conveyed by flights through a blast of flame from the dryer burner to the discharge chute and into a batching hopper above the pugmill. As the hot dry aggregate is released into the pugmill, the correct proportion of hot asphalt from a volumetric measuring reservoir is discharged into the pugmill through a spray bar. This eliminates handling of the hot asphalt by buckets or ladles. As the asphalt reservoir is emptied, it is refilled by a power-driven asphalt spray pump. The aggregate and asphalt are mixed and conveyed through the pugmill to the discharge gate where the hot, mixed material is ready to be used.

Specifications of the Patchmobile include: weight, 3,735 pounds; length, 156 inches; width, 72 inches; and height, 84 inches. The plant has a Model AEH four-cycle Wisconsin air-cooled engine; a 54-inch-long x 13-inch-diameter pugmill with 30 mixing blades and a replaceable liner; and a 165-gallon asphalt kettle, also available with compartments of 110 and 55 gallons. Other equipment includes a ¾-inch Viking rotary-gear spray pump and a 7-foot rotary dryer. A flexible wire braid rubber spray hose with spray bar and tip is furnished as standard equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 800.

The United States has about 6 per cent of the world's population, has 78 per cent of the world's automobiles, and 51.6 per cent of its trucks and buses.

How to Stabilize Roads By Mixing in Rock Salt

■ New literature tells how rock salt, blended with well-graded road gravel or crushed aggregate, is used as a weather-resistant binder and stabilizer. According to the booklet, the salt forms a solution which lubricates the mass to improve workability. The surface, when rolled, has a tight, resistant, glazed finish which helps to anchor the coarse aggregates and to reduce dust nuisance.

The booklet describes the use of a Seaman Pulvi-Mixer in salt stabilization along with other equipment, including a grader with scarifier, a spreader, water distributors, pneumatic rollers, steel wheel rollers, and dump trucks.

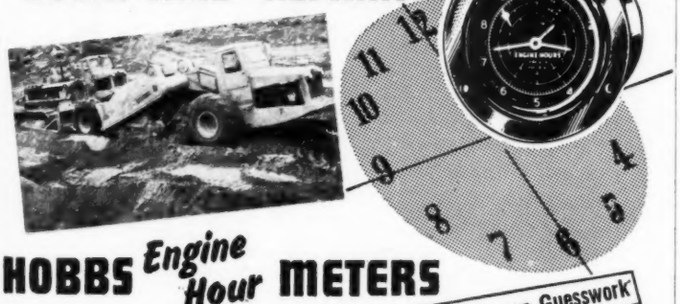
After compaction, the salts gradually recrystallize and form a thin coating over the aggregate particles. This coating is believed to retard the movement of moisture throughout the mass and thus stabilize it against becoming too wet or too dry.

To obtain this literature write to Seaman Motors, Inc., 305 N. 25th St., Milwaukee 3, Wis., or use the Request Card at page 18. Circle No. 769.

Turner for Iowa Mfg.

Kenneth V. Turner has been appointed district representative for Iowa Mfg. Co., Cedar Rapids, Iowa, makers of Cedarapids aggregate producing and bituminous mixing equipment. With headquarters in Dallas, Texas, Mr. Turner's territory covers the states of New Mexico, Texas, Oklahoma, Arkansas, and Louisiana. He joined the Iowa organization in 1949.

"ON-TIME" Maintenance *cuts* "DOWN-TIME" REPAIRS!



HOBBS *Engine Hour* METERS

Remove Maintenance Guesswork

You get longer life and longer periods of trouble-free operation when you know the length of TIME your powered equipment has run. A revolution counter can't tell you — it takes a true timing instrument that records HOURS and MINUTES. The HOBBS ENGINE HOUR METER is such an instrument . . . it helps prevent breakdowns and prolong equipment life.

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Installed as original equipment and/or recommended by leading manufacturers. Get full information from your factory branch, representative or distributor . . . or write for FREE CATALOG 569.

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John W. Hobbs Corporation

2067 YALE BLVD. SPRINGFIELD, ILLINOIS

Here's what makes "HEIL EQUIPPED" DUMP TRUCKS PAY-OFF!

Heil double arm, twin cylinder, heavy-duty hoist.

Heil double arm, single cylinder, light and medium duty hoist.

HEIL Bodies and Hoists are built with *your* job in mind . . . to pay off in profit. Heil hoists are fast-acting . . . in less than 12 seconds bodies are elevated to 50° or more! The rugged arm assembly is designed for strength, without dead weight. The simple toggle principle of the linkage eliminates troublesome parts, requires extremely low oil pressure. Check these other Heil dump unit advantages: Lightweight design for bigger payloads; no-sag floor construction for long body life; low mounting height to make hand-loading easier.

THE HEIL CO.

Dept. 393, 3003 W. Montana St., Milwaukee 1, Wis.
Factories: Milwaukee, Wis.—Hillside, N. J.

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Sales Offices: New York, Union, N. J., Washington, D. C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle; Rio de Janeiro, Brazil.

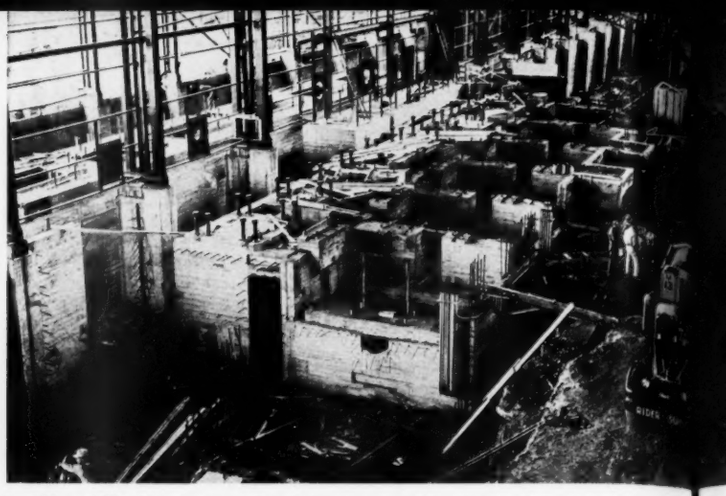
HEILINER 13 AND 18-CU. YD. SCRAPERS

HEILINER 20-CU. YD. BOTTOM DUMP WAGON

CONTRACTOR'S BODY

Construction Camera

Road Surfacing—Corn ripens in a field near Francesville, Ind., as an important farm-to-market secondary road gets a tar and stone resurfacing. The Allis-Chalmers Model D, owned by Pulaski County, gives the material a thorough mixing. Stone chips will be applied later to finish the surface.



Steel Sheet Mill—Huge concrete foundations are poured for Pittsburgh Steel Co.'s new $28,000,000 mill near Allenport, Pa. Ragnar Benson, Inc., began construction of the hot rolled sheet mill early in 1951 and had the plant operating 20 months later. The new facilities will be housed in buildings covering 350,000 square feet.

"Nothing Like a Dorsey Low Bed" for Easy Loading and Handling

For easy loading and also for load stability, stub axles are mounted on walking beams.

Moving a bulldozer and crane from one small job to another calls for speed and efficient loading—and Rutledge Concrete Company of Richmond finds this Dorsey MTS meets these requirements at least two or three times a day. This trailer carries the machinery to speed the routine of installing septic tanks throughout a wide area served by Rutledge.

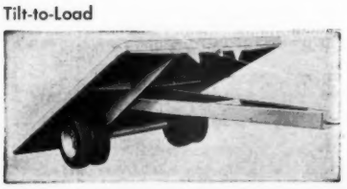
"WE CAN'T AFFORD TO WASTE TIME moving equipment from one job to another—and we find the highly maneuverable Dorsey MTS fits this situation perfectly. Even loaded to capacity it's easy to handle on the highway or in tight places."—says L. H. Newcomb, General Manager, Rutledge Concrete Products Company, Richmond, Va.

YOUR DORSEY DISTRIBUTOR HAS A HEAVY-DUTY TRAILER FOR EVERY SPECIALIZED NEED: LOWBOYS, TILT-TO-LOADS, FLOATS, PLATFORMS

Rish Equip. Co.'s Branches in Virginia and West Virginia are a part of Dorsey's national distributors network. See the Yellow pages.

The versatile Oil Field Float

Tilt-to-Load



DORSEY TRAILERS

DORSEY TRAILERS • ELBA, ALABAMA

Booklet Gives Answers On Engineering Careers

The increasing interest in engineering shown by high school students during recent months has led to the publication of a new booklet on the subject released by Stevens Institute of Technology, Hoboken, N. J.

Entitled "What's Engineering?", the booklet answers questions concerning engineers' work, and discusses special aptitudes and scholastic abilities which prospective engineering students should possess. It is intended to aid students considering engineering as a career and high school counselors called upon to answer questions about the profession.

The first part of the booklet deals separately with engineering research, design, development, and production. In addition, "What's Engineering?" outlines opportunities in the field, and lists qualifications which must be met by those in the profession. Copies of the illustrated pamphlet are being mailed to guidance counselors.

Get PRE-BID estimates by competent, practical construction men who have specialized in all phases of dewatering for up to 26 years.

All estimates based on careful analysis of sub-soil borings, on actual experience in the soils to be dewatered, and on site investigations.

When soil conditions indicate other dewatering methods are more practical and economical, we are qualified to advise other proven methods.

26 YEARS EXPERIENCE

Foundation Equipment CORPORATION

Long Island City 1, N.Y. 37-35 10th St. EXeter 2-1100

Chicago, Illinois 2608 W. 111th St. HIlltop 5-8282

Air-Placing Concrete—Spalling on the back face of this concrete dam near Morgantown, N. C., is repaired by air-placing concrete on the deteriorated sections. Both the preliminary sand-blasting and the air-placing were done with the same piece of Bondactor equipment. The workman is suspended in a bosun's chair.

Rubber Asphalt—The first piece of rubber-asphalt pavement for a New York City street is laid on First Avenue between 24th and 25th streets. The 1½-inch course covering 2,300 square yards will give the city an opportunity to check the new material under heavy traffic. The project is part of a program of the Natural Rubber Bureau.

Materials Hoisting Tower

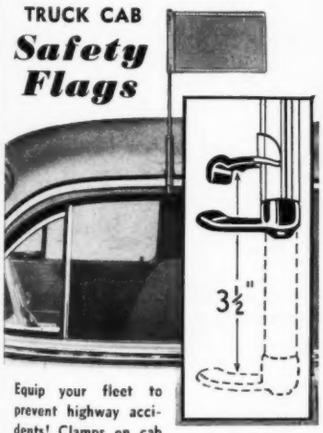
■ A materials hoisting tower is shown in literature from St. Anthony Machine Products Co., 2424 E. Franklin Ave., Minneapolis 6, Minn. The platform of the Roll-O-Hoist is raised by a lightweight drum-and-cable winch that bolts to the mounting base. The power unit is a 6 or 7-½-hp Wisconsin engine or a single or 3-phase 110 to 220-volt electric motor.

The tower is available in self-supporting models to 32 feet high. The platform may be stopped automatically at any pre-determined unloading level.

Tip-over buckets to handle concrete are available in either 4 or 7-cubic-foot capacities. The skip buckets bolt to the platform and are removable when not in use. The buckets can be made to dump into carts or buggies, or to chute directly into the forms and may be had with either a manual or automatic dumping mechanism.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 821.

TRUCK CAB
Safety Flags



Equip your fleet to prevent highway accidents! Clamps on cab door — holds tight — weatherproof. Bright red flag 10" x 6½" of tough gabardine. $27.00 doz. complete. Banner only $4.75 doz. F.O.B. our plant.

Potent Pending

The Wright Flag
NAPPANEE, INDIANA

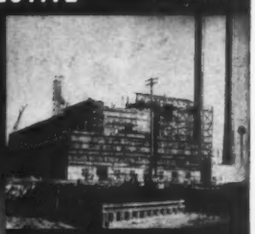
INVEST IN
U. S. DEFENSE BONDS
NOW EVEN BETTER

Formfilm coated forms in place, Ripon College, Wisc.

FOR CLEAN, SMOOTH CONCRETE SURFACES USE

formfilm

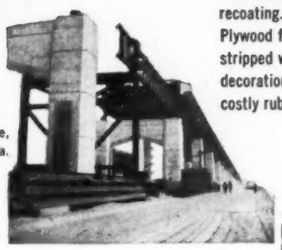
THE NON-OILY PROTECTIVE COATING FOR PLYWOOD FORMS



Pacific Gas & Electric Co., Moss Landing Steam Plant

St. James Church, Orlando, Fla.

Architects, engineers and contractors specify Formfilm because of its practical and economical service. Formfilm is readily applied to the forms on the job site by brushing or dipping. Formfilm provides an alkali water-resistant coating to protect the costly plywood forms and prevent grain raise. It provides a tough, abrasion resistant coating permitting the re-use of the forms without recoating. More than a dozen re-uses are reported by contractors. Plywood forms coated with Formfilm are easily stripped without leaving grain marks and the concrete is ready for decoration or painting, if desired, without costly rubbing or cleaning. Send for complete data today.



Penrose Ave. Bridge, Philadelphia, Pa.

A. C. HORN CO., Inc. est. 1897

Manufacturers of materials for building maintenance and construction
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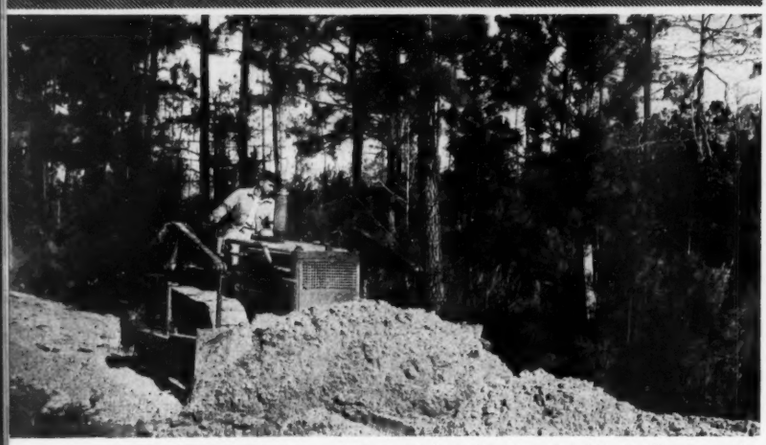
Construction Camera



Coastal Access Road—Many of the isolated beaches along the Atlantic Ocean coastline of Harry County, S. C., are now being made accessible by a new 25-mile gravel-topped road. The complete road-building operation, from clearing to final compaction, is done with International crawler tractors.

River Lock — The unique arrangement of 18 removable fabricated steel-gates forms an emergency dam for the upstream end of the landward chamber of Locks No. 2 on the Monongahela River at Braddock, Pa., now under construction for the Corps of Engineers by the Contracting Division of Dravo Corp.

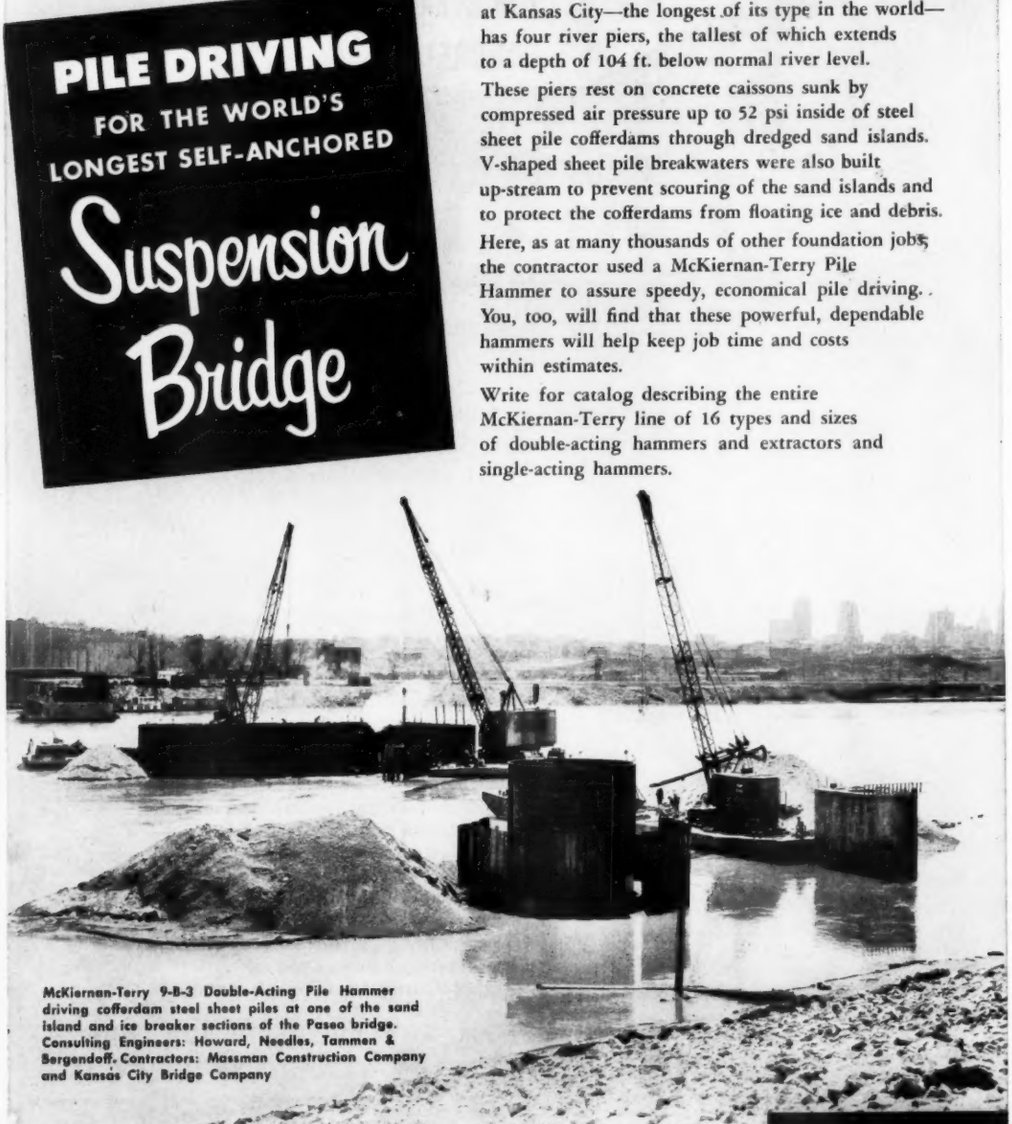
PILE DRIVING
FOR THE WORLD'S
LONGEST SELF-ANCHORED
Suspension Bridge

The new Paseo bridge over the Missouri River at Kansas City—the longest of its type in the world—has four river piers, the tallest of which extends to a depth of 104 ft. below normal river level.

These piers rest on concrete caissons sunk by compressed air pressure up to 52 psi inside of steel sheet pile cofferdams through dredged sand islands. V-shaped sheet pile breakwaters were also built up-stream to prevent scouring of the sand islands and to protect the cofferdams from floating ice and debris.

Here, as at many thousands of other foundation jobs, the contractor used a McKiernan-Terry Pile Hammer to assure speedy, economical pile driving. You, too, will find that these powerful, dependable hammers will help keep job time and costs within estimates.

Write for catalog describing the entire McKiernan-Terry line of 16 types and sizes of double-acting hammers and extractors and single-acting hammers.



McKiernan-Terry 9-B-3 Double-Acting Pile Hammer driving cofferdam steel sheet piles at one of the sand island and ice breaker sections of the Paseo bridge. Consulting Engineers: Howard, Needles, Tammen & Bergendoff. Contractors: Massman Construction Company and Kansas City Bridge Company

OTHER McKIERNAN-TERRY PRODUCTS

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.

GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 19 PARK ROW, NEW YORK 38, N. Y.
Plants: Harrison, N. J. and Dover, N. J.
MK344

Reserve Mining Co. Building New Project

A town is mushrooming not far from Beaver Bay, Minn., and near the site where the Reserve Mining Co. is erecting its taconite processing plant. There, the company is building more than 300 homes and an 18-classroom school for families of men employed at the new plant. The site already has 64 housing units, built last year by the company.

John W. Galbreath & Co. will build and develop this townsite and a second town, Babbit, located near Reserve's taconite mine and small processing plant, where 129 houses have already been erected. The combined population of both towns is expected to be more than 9,000 by 1957. By that time, the new plant now under construction is expected to be producing 3,750,000 tons of iron-ore pellets from taconite annually.

The Galbreath organization will also supervise construction of the town's shopping center, handle the rental and sale of homes, and act as community managers. The houses, made by the Harnischfeger Corp., Port Washington, Wis., will be erected by the MacDonald Construction Co. of St. Louis, Mo.

Plans and specifications for the school were prepared by Arthur E. Rowe & Associates, Cleveland, Ohio and A. Reinhold Melander, associate architect of Duluth, Minn. It will be built by Lovering Construction Co. and J. S. Sweitzer & Son, both of St. Paul, Minn.

ROAD BUILDERS — IT'S SENSATIONAL!
DRAGS **PECKERWOOD** DRAGS
STEEL SPRING WIRE ROAD BROOMS
MADE IN ANY C-O-N-T-I-N-U-O-U-S LENGTH UP TO 12 FEET
WIDTH 6 INCHES—IT'S DIFFERENT
ASSEMBLE YOUR OWN—IN ANY SHAPE REQUIRED—IN MINUTES, NOT HOURS
NO FRAME REQUIRED
MADE WITH KILN DRIED 6" WIDE HARDWOOD AND HEAVY SPRING STEEL WIRES TRIPLE OUT EACH HOLE. NOT STAPLE SET.
THIS IS IT! ORDER NOW

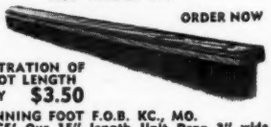


ILLUSTRATION OF 10-FOOT LENGTH
ONLY **$3.50**
RUNNING FOOT F.O.B. KC., MO.
NOTICE! Our 13" length Unit Drag 3" wide with the two bolts that fits your frame, still $2.50 ea.
SINCE **VAN BRUSH MFG. CO.** 1928
327 S. WEST BLVD., KANSAS CITY 8, MO.

Stone Base Course—Crushed-stone base course for the widening of U. S. 22 near Somerville, N. J., gets a thorough pounding from these six 425-pound shoes of the new Vibro-Tamper. Franklin Contracting Co., Newark, N. J., is doing the work for the New Jersey State Highway Department.

New Porpoises Home—Just a few feet from the surf at Marineland, Fla., the future home of a group of trained porpoises is under construction by Arthur Perry Co. of Jacksonville, Fla. The large concrete tank will be a new addition to the world-famous sea life attraction on the Atlantic Ocean.

Carbide-Tipped Drill Has Fluteless Design

■ A new fluteless drill for drilling plastics and making shallow holes in cast iron is announced by the Hayden Twist Drill Co., 8626 Lyndon Ave., Detroit 21, Mich.

The drill consists of a shank of drill rod that is between 50 and 60 per cent of the diameter of the carbide tip. The shank and tip are joined together by brazing.

The voluminous and abrasive chips formed in drilling plastics are difficult to handle in the conventional drill. The manufacturer states that by eliminating flutes entirely, this drill increases the rate of penetration into plastics and non-metallics.

The drill is tested at the factory by drilling into cast iron with a feed of .003 inch per revolution. It comes in sizes from 13/64 to 11/16 inch.

For further information write to the company, or use the Request Card at page 18. Circle No. 762.

Aeroquip Corp. Expands

Aeroquip Corp., Jackson, Mich., manufacturer of flexible hose lines with fittings and couplings, has acquired the plant of Sterling Electric Motors, Inc., Van Wert, Ohio.

The efficient operating facilities of the new plant will lower handling charges and consolidate different warehouse locations into one easily controlled unit. In addition, Aeroquip is transferring its Cheboygan, Mich., operations to the Van Wert plant.

TRANSITS and LEVELS

NEW OR REBUILT SALE OR RENT

HEADQUARTERS FOR REPAIRS — any make

We will buy or trade in old Transits, Levels, Alidades, etc. Send instruments for valuation.

Write for Catalog EC-39 of Engineering Instruments, Engineering Field Equipment and Drafting Room supplies.

WARREN-KNIGHT CO.
Mfrs. of Transits & Levels
136 N. 12th St., Philadelphia 7, Pa.

Meet the U. S. Rubber Hose they couldn't squash or cut!

This immensely heavy crane rolled repeatedly over the U.S. Royal Cord Air Hose in left foreground. Hose remained unharmed, even though ground was paved with sharp shells.

In the 14 months it took to build a large aluminum plant in Texas, U.S. Royal Cord Air Hose took a beating which amazed construction men. 50-ton cranes on tractors, trucks carrying steel girders or gravel, ran over it again and again. *No cribbing was used.* The pavement was surfaced with very sharp and abrasive oyster and clam shells. Yet the hose suffered no damage, not even when carrying 125 pounds of water closed off at the end! Weathering and salt air had no effect on it. What's more, every foot of the hose is now being used in the finished plant.

If there ever was a hose you can thoroughly abuse, U.S. Royal Cord is it. You don't have to waste time and money cribbing it. Move it about at will. It's the only cord hose built with true tire construction.

This is the sort of endurance you can count on in any United States Rubber Company product. There are 25 "U.S." District Sales Offices, staffed with engineers to serve you. Or write to address below.

Constant stream of heavily loaded vehicles at considerable speed roll over the U.S. Royal Cord Air Hose on hard packed roadway. Hose suffered no damage.

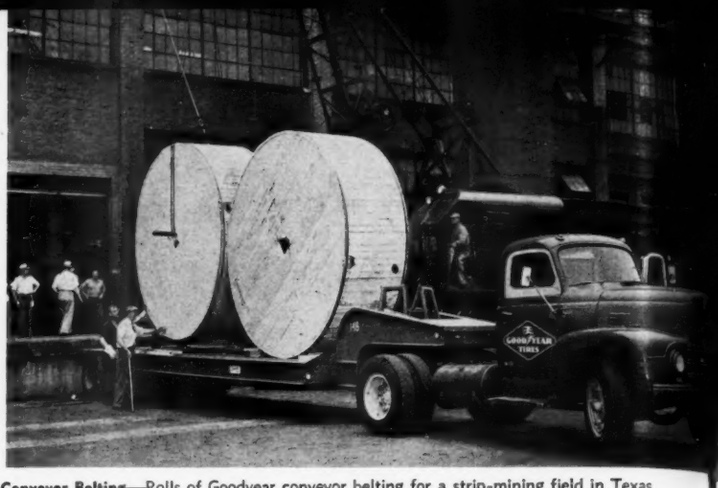
U.S. RUBBER
SERVING THROUGH SCIENCE

"U.S." Research perfects it. "U.S." Production builds it. U.S. Industry depends on it.

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes
Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

Modernizing Wood Bridges—Worn out timber bridge decks are now being replaced in many parts of the country with precast concrete slabs. This bridge in Yazoo County, Miss., has new creosoted caps installed and concrete slabs in position only 8 hours after work started. Choctaw, Inc., supplied the slabs.



Conveyor Belting—Rolls of Goodyear conveyor belting for a strip-mining field in Texas are loaded onto a Dorsey low-bed trailer with an Osgood crane. Destined to become part of a 3-mile conveyor system, each roll of 42-inch-wide belt weighs 25,000 pounds. The conveyor will carry material at the rate of 550 feet per minute.

WASHO Test Road Carries 1953 Traffic

Anticipated failures in underdesigned sections of the Western Association of State Highway Officials test road near Malad, Idaho, on which 1953 test traffic started to flow June 11, have already begun to appear, according to the Highway Research Board.

Approximately 1,000-axle applications have caused damage to some of the 6-inch sections of the road, amounting to failure in the wheel path near the road's shoulder. Damage on the outer wheel path has also been noted in parts of the 10-inch-thick sections, but there has been no serious damage reported in the 14, 18, or 22-inch pavements.

Test trucks, with tandem-axle loads of 32,000 and 40,000 pounds per pair of axles, operate on one test loop, while single-axle units, loaded to 18,000 and 22,400 pounds per single axle, operate over a similar road.

The tests are being made to determine the relative load carrying capacity of various thicknesses of pavement and base combinations. Sections of the road are underdesigned, adequate, or overdesigned. Minor pavement failures—rutting or cracking—are repaired by applications of thin bituminous skin patches. When it becomes impossible to carry traffic over these patched areas without their being impaired, they are rebuilt. Pavement maintenance and reconstruction is carried on with as little delay to test traffic as possible.

The test is sponsored by eleven western state highway departments with the cooperation of the Bureau of Public Roads, truck and trailer manufacturers, and the petroleum industry. This study by the Highway Research Board of the National Academy of Sciences, Washington, D. C., is expected to provide answers to problems facing highway and tax administrators and groups in the highway transportation industry, as well as private motorists.

Plans for 1954 call for operation during the spring, when frost goes out of the sub-soil. This is usually the most critical period of the year, even in areas where freezing temperatures are not common. The road was constructed during the summer of 1952.

Look at this GUARANTEE

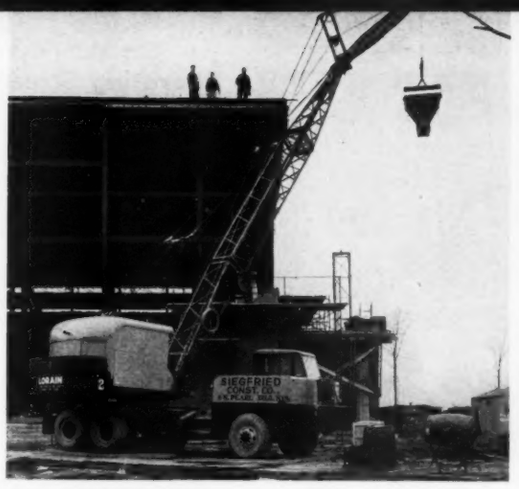
"The M-R-S 150 is GUARANTEED TO SELF-LOAD a
of normal clay loam soil in a time of not
and a distance of not more than 125 feet."

With the M-R-S 150 powering your four-wheel scrapers you are *GUARANTEED* production that can make money for you. The outstanding traction and drawbar pull that permit the M-R-S 150 to *Self-Load* a 10 yard struck capacity scraper with such a tremendous guaranteed load also enable it to obtain heaping loads with a 17 yard struck capacity scraper *PUSHER-LOADED*.

M-R-S offers you all the big advantages of a rubber tired prime mover without losing the big investment you already have in scrapers — PLUS versatility that keeps all your equipment working.

Look at the facts and you'll agree . . . . M-R-S is the best DOLLAR-FOR-DOLLAR buy on the market today. Plan now to team your scrapers up with M-R-S for production, versatility and PROFIT!

Autopista Highway—Work on the huge Autopista Highway in Venezuela nears completion as a Caterpillar D8 tractor with a No. 80 scraper does final grading on one of the many deep earth cuts.



Elementary School—Workmen on top of a new school in Tonawanda, N. Y. await the next bucket of concrete during one of the roof pours. A Lorain Moto-Crane with a 50-foot boom and a 25-foot jib does the job.

Scaffolds as Shores—Pouring concrete ceilings for a new building in Cleveland is being speeded by using this system of Universal scaffolds as shores.

PRODUCTION!

minimum of 22,950 lbs.

more than 75 seconds

Actual quotation from M-R-S performance guarantee

MODEL	M-R-S 125	M-R-S 150	M-R-S 190
Maximum Horsepower	125	200	275
Prime Mover To Self-Load Struck Yards	8	10	12
Pusher Load Struck Yards	13½	17	20

EXCLUSIVE WEIGHT TRANSFER

Exclusive WEIGHT TRANSFER provides additional drive axle weight which increases the contact area of the soft low pressure drive tires approximately 60%, producing superior traction.

SHORT TURNING DIAMETER

The short turning diameter and high maneuverability of M-R-S tractors when used to power four-wheel scrapers or bottom dump Mississippi Wagons makes them ideal in construction of narrow secondary roads. A short non-stop turning diameter of 28 feet to 34 feet is practical for all M-R-S tractors with different makes and models of scrapers.

M-R-S offers outstanding versatility, too. In a matter of minutes M-R-S provides power for bottom dump Mississippi Wagons, heavy compacting rollers, machinery trailers, or for general utility.

Let us prove this outstanding production to you! write, wire or phone for complete information.

THE EMBLEM OF DEPENDABILITY

M-R-S MANUFACTURING COMPANY

FLORA AND JACKSON, MISSISSIPPI, U.S.A.

Torque-Converter Drive For Fork-Lift Trucks

■ The 6,000 to 7,000-pound-capacity Utilitruc fork-lift trucks made by the Clark Equipment Co., Battle Creek, Mich., are now available with torque-converter drive. Known as Hydratork drive, the new automatic transmission makes it possible to operate a gas-powered fork-lift truck with only an accelerator, a brake pedal, and a forward-reverse selector lever on the steering column. It eliminates the need for a gear shift and a clutch pedal.

One of the advantages of the torque converter is that it does away with gear clashing during gear engagement. It also makes for smoother acceleration and more positive driver control.

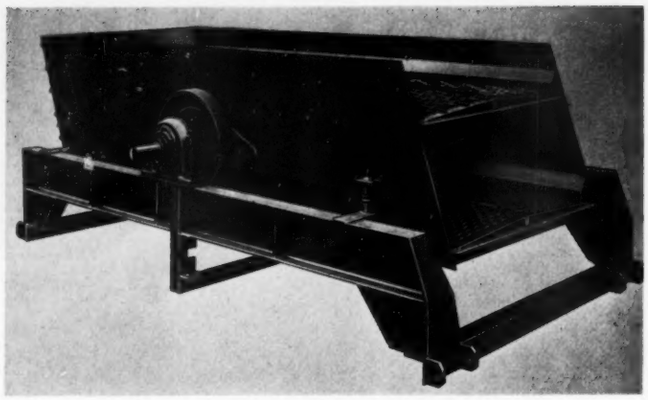
For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 817.

Booklet on Line of Forms And Concrete Accessories

■ A summary of the Gateway line of concrete inserts, pipe hangars, removable metal concrete forms, laminated fiber tubing for concrete columns, and tubing for warm air perimeter-heating are shown in new literature from the manufacturer. The booklet shows a number of malleable iron ceiling inserts and steel inserts. Other specialized inserts include a continuous slotted type, a horn-grip type, a tapped piece, and a variety of adjustable inserts. One section of the booklet is devoted to bar supports and spacers.

The booklet also describes the company's specialized concrete forms. Laminated fiber tubes for constructing concrete piers and columns up to 24 inches inside diameter are described. Metal flat-slab forms are made in a standard size of 35 x 60 inches, and in special sizes for use around recesses, chimney openings, and stair wells. Details are also given on the company's removable pans for concrete joist floor construction.

This literature may be obtained from Gateway Engineering Co., 3233 W. Grand Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 725.



The new 5-foot-wide Diamond vibrating screen, made in 1, 2, 2½, and 3-deck models.

Vibrating Screens

■ A series of 5-foot-wide vibrating screens are available in 10, 12, and 14-foot lengths. The Diamond Iron Works, Inc., 1748 N. Second St., Minneapolis 11, Minn., manufacturer of the screens, offers a choice of 1, 2, 2½, or 3-deck units.

Specifications include Timken double-row roller bearings, rubber-mounted main-bearing cages, adjustable spring-balance cups, and screen clamp bars over the center supports. Side plates are 5/16 inch and there is a 5/16-inch throw on the shaft. Shaft dimensions are 4½ inches at the main bearings, 5¼ inches at the pitman bearing, 5¾ inches between the pitman bearings, and 3 7/16 inches at the flywheel.

The screens can be driven with either V or flat-belt drive and can be equipped with spray bars for washing sand and gravel during the screening operation.

The manufacturer claims that a new method of reinforcing the side plates at the shaft eliminates vibration.

For further information write to the company, or use the Request Card at page 18. Circle No. 828.

How to Build Partitions Of Metal Lath, Plaster

■ Technical data and construction techniques for building metal lath and plaster solid-stud partitions are available in a bulletin from the Metal Lath Manufacturers Association, Engineers Bldg., Cleveland 14, Ohio.

According to the text, metal lath has replaced burlap in partitions because it does more than act as a base for plastering. It also reinforces the vertical slab against temperature shock and physical impacts.

The booklet points out that metal lath is the only plaster base that can be used with portland cement as well as with gypsum plaster. Instead of depending on a suction bond, metal lath grips the plaster through hundreds of small keys per square foot. For this reason, metal lath solid partitions can be faced with ceramic tile set in a portland cement mortar.

The literature uses photographs and drawings to outline partition construction technique. It follows the procedure from the erection of channel studs, through ceiling attachment, floor attachment, erection of the metal lath, electrical installation, and plastering.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 684.

Front-End Loader

■ A front-end loader with hydraulic torque converter drive and clutch-type transmission is shown in literature from Tractomotive Corp., Deerfield, Ill. The Model TL-10 Tracto-Loader has a ¾-cubic-yard bucket capacity and four speeds forward and four reverse. The loader turns in an 11-foot radius. Weight of the unit is 11,400 pounds.

The literature takes up the construction features of the loader and illustrates a number of interchangeable attachments for the units. These include a light-materials bucket, bucket teeth, a lift fork, a crane hook, and a bulldozer blade. Complete specifications are included.

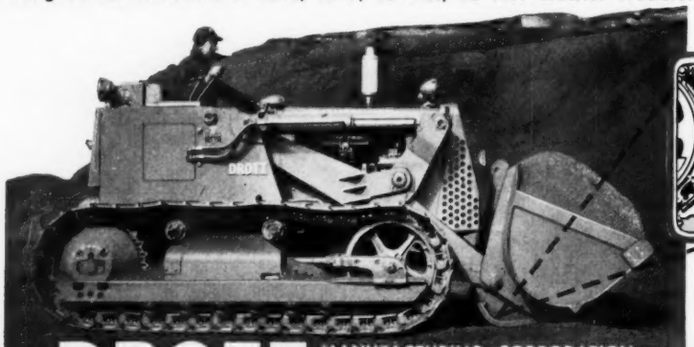
This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 722.

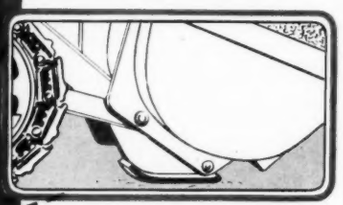
FEELING NO STRAIN

DROTT SKID-SHOVELS move loads on skid shoes: eliminates "carry strain" — prolongs tractor life!

Designed for International TD-6, TD-9, TD-14A, TD-18A Crawler Tractors.

Semi-skidding *full* payloads over rough terrain with DROTT'S exclusive shoe transportation saves wear and tear on loader, tractor and operator. Operator has full 360° visibility and entire unit maintains complete balance at all times.





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DID YOU SAY PORTABLE?

YES! Here's the scale that can be moved from job to job as a unit by merely removing six bolts which hold the side levers in place . . . It can also be installed as a pitless scale, saving expensive concrete pit - construction costs.

ACCURATE . . . perfectly balanced for "Lifetime-Accuracy." Wide steel bases, at both ends, support scale, therefore require no concrete footings. Easy-to read weighbeam is chrome-plated. Other vital parts are electro-plated against corrosion.

Capacities:
20, 25 & 30 Ton
Platform Lengths:
18, 22, 24 and 30 ft.

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Est. 1918

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Rock Drills, Pavement Breakers and Clay Diggers

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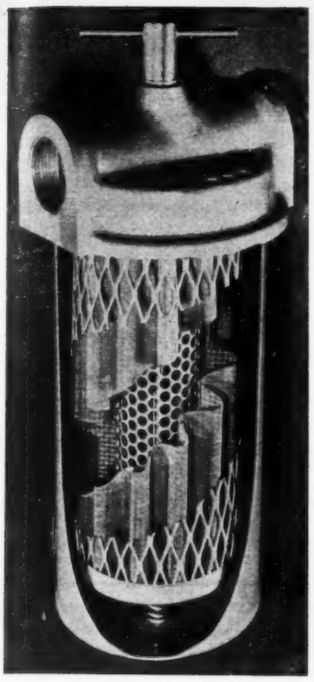
Send for catalog or see your local distributor.



The interior of the Marvel Synclinal filter illustrates how the device protects hydraulic systems from dirt, grit, rust, and other foreign matter. The filters are available in sump and line, type models in capacities from 5 to 1,000 gpm, and in mesh sizes from 30 to 200. For further information write to Marvel Engineering Co., 625 W. Jackson Blvd., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 712.

New Attachment Makes Road Widening Trench

■ A new bulletin tells how to cut a road-widening trench with four motor-grader passes. The technique features the Domor road widener, an attachment that bolts to the motor grader blade and is operated with the blade controls. The depth of cut is preset and controlled by gage rollers.

The first pass with the motor-grader blade cores out the trench next to the pavement. After a second pass completes the coring and carries the material to the outside edge of the trench, the third pass is made with the road-widener attachment. The point of the road widener is kept against the edge of the pavement so that it will clean out foreign substances from the edge of the pavement to make a good bonding surface for the fresh concrete. The final pass with the widener brings the trench to grade.

To obtain this literature write to the Ulrich Products Corp., Roanoke, Ill., or use the Request Card at page 18. Circle No. 789.

LeTourneau-Westinghouse Reorganizes Territories

The reorganization of the domestic sales territories into Eastern and Western Divisions has been announced by LeTourneau-Westinghouse Co., Peoria, Ill., manufacturer of tractors and earth-moving equipment. A Central Division had previously been included.

J. A. Vincent continues as Eastern Division sales manager, and F. W. Duke, former district sales representative, has been appointed Western Division sales manager.

How to Cut Metals With Hack and Band Saws

■ A new booklet tells how to cut metals properly with hand and power hack saws and with band saws. Included in the pocket-size booklet are rules for selecting and using hack-saw blades and frames, an explanation of the right and wrong way to saw a piece of metal, and a table describing the causes and cures of blade trouble. Other sections tell how to select and use power hack-saw blades, and explain and breakdown the number code for power blades.

The booklet recommends what types of hand hack-saw blades should be used for cutting 15 standard materials, and the types of power blades for cutting 14 materials. It also gives the types of blades to use with 66 different band saws and the correct blades and cutting speeds for 24 ferrous metals, 21 nonferrous metals, and 12 plastics and nonmetallics.

There is also a list of prices and specifications on the complete line of Clemson's Star hand and power hack-saw and band-saw blades.

To obtain this literature write to Clemson Brothers, Inc., Middletown, N. Y., or use the Request Card at page 18. Circle No. 795.

Surfa-slick SELF-HEATING ASPHALT SMOOTHING IRON

The Surfa-Slick Model B Down Draft (Heat Deflected Downward) Surfacing Iron for Cold Mix, Crack Sealing, patching and damp and cold weather use.

The Surfa-Slick Model A Up Draft (Heat Deflected Upward) Surfacing Iron for all-around Hot Mix work.

Wire or write for your nearest dealer.

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CAMM MANUFACTURING

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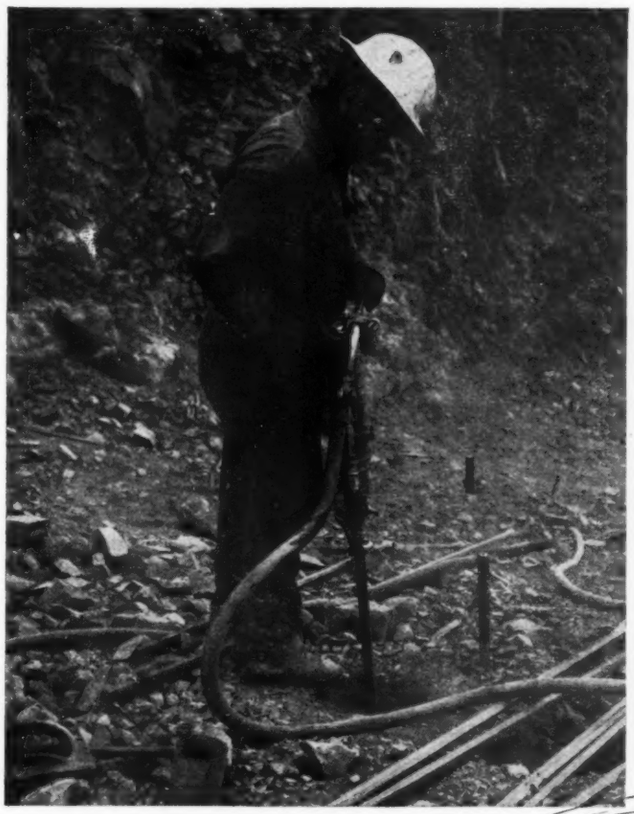

2 Big Extra Values for you!

...in JOY SILVER STREAK ROCK DRILLS

1 EXCLUSIVE! CADMIUM PLATING INSIDE and OUT

Cadmium plating prevents rusting of JOY Silver Streak Rock Drills and spare parts while in use or in storage. In addition, the plating forms cadmium oxide under frictional heat and pressure. This so effectively acts as a lubricant that the inner parts will not score, *even if regular lubrication is temporarily neglected!* In addition to assuring a smooth "run-in," cadmium plating allows closer tolerance of precision fitting parts—vital factors in the power and long life of the drill.

2 EXCLUSIVE! JOY DUAL VALVE "Makes Air Do More Work"

The fast, powerful JOY Dual Valve action results in more and harder-hitting piston strokes per minute, for faster drilling with less air. The right amount of air is admitted behind the piston on the power stroke, and air is excluded ahead of the piston, to exert maximum force on the drill steel. Then the Dual Valve meters just enough air ahead of the piston to return it with a fast, snappy action for the next blow. The air actually does more work!

WAD C 4026 Over 100 Years of Engineering Leadership

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JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

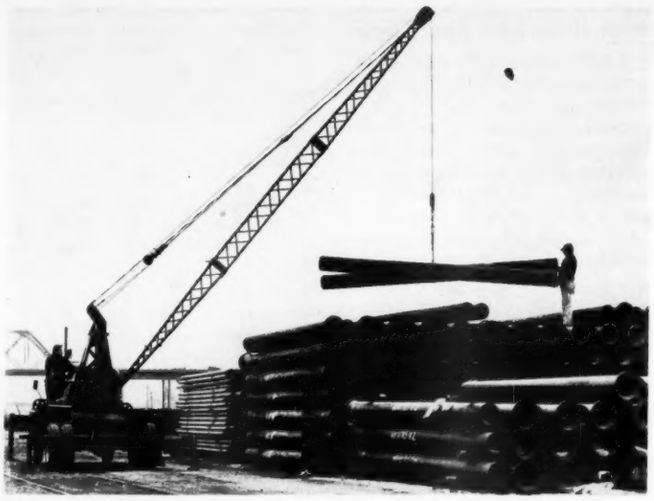
Prefabricated Buildings

■ Prefabricated steel buildings are shown in literature from the John Cooper Co., Inc., 307-309 Second St., Hackensack, N. J. The literature illustrates the buildings in a variety of uses and in different sizes and shapes. The field-erected buildings are shown in use as repair shops, field offices, etc.

The buildings are fireproof, weathertight, and durable and are said to be low in maintenance cost. They can be dismantled and moved without loss or damage to any of the material.

The company offers a building designing service to assist the buyer in planning a building that will be most suitable to his needs.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 730.



The Pitman Model 80 crane.

Bulletin on Trencher

■ A bulletin on the Cleveland Model 92 trencher, which now has a 4-speed motor transmission, is available. The new transmission doubles the number of digging-wheel and traction speeds previously available. The Baby Digger now has 48 evenly graduated speed combinations with 30 or more usable digging speed combinations.

Center spread of the bulletin gives complete details and illustrations of component parts of the unit. There is also a table of digging-wheel and traction speeds.

A section describes the Model T-5 trailer for transporting the trencher.

To obtain this literature write to the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 829.

Mobile Truck Crane Has 4-Ton Capacity

■ A truck crane that has a capacity of 4 tons and a 25-foot boom is announced by Pitman Mfg. Co., 300 W. 79th Terrace, Kansas City, Mo. The new crane, designed for installation on trucks 2½ tons or larger, is available with additional boom lengths up to 59 feet. Maximum ratings for the extra boom lengths are 8,000 pounds for a 25-foot length, 6,000 pounds for the 37-foot unit, 3,000 for the 48-foot extension, and 1,000 pounds for the 59-foot boom. The 25 and 37-foot booms are hinged on the side and can be folded and unfolded making faster setups possible.

The unit's loadline winch can be operated either power-up and power-down or free-spooling. This allows the operator to let the load down under full power or to slip it down with a foot brake. A power-up and power-down topping winch raises and lowers the boom, and a hydraulic cylinder swings the boom in a 180-degree arc.

Controls for the crane are outside the truck cab along side the unit's main A-frame. The load line, boom topping, and boom swing are controlled by three levers directly in front of the operator.

A feature of the unit is that a fifth wheel can be installed on the crane's subframe on a long-wheel base truck so that a trailer may be hauled behind.

For further information write to the company, or use the Request Card at page 18. Circle No. 803.

Film on Blasting Methods

"The Inside Story", a 15-minute 16mm sound film, shows how modern techniques make blasting a controlled sequence of events almost precisely adaptable to the type of rock, the surroundings, and the specific result desired.

The film explains the principles of blast detonation, and discusses delay blasting as well as alternate velocity loading. By using a "machine-gun" sequence camera, Atlas Powder Co., Wilmington, Del., has clarified these operations and made possible some of the most revealing portions of the film.

Prints may be obtained from the company for showing before mining and construction engineers.

WATSON-STILLMAN
HYDRAULIC POWER TOOLS FOR INDUSTRY

HYDRAULIC JACKS and HAND PUMPS
These sturdy jacks, with either independent or integral pumps, are useful for many jobs in construction and maintenance. Capacities to 500 tons. Pumps, single and double plunger types, with reservoirs of different capacities for operating small hydraulic tools, jacks and hydraulic equipment, and for general hydrostatic testing purposes. Jacks or pumps available separately.

PORTABLE PIPE BENDERS
Bends standard, extra heavy and double extra heavy steel pipe from ⅜ inch to 2 inch, as well as standard weight pipe up to 3 inch diameter. Also solid mild steel bars up to 2 inch diameter.
9-0-10

WIRE ROPE SHEARS
W-S wire, cable and bar shears provide years of trouble-free general service. They are light and portable for convenient on-the-job use.

AIR ENGINE PUMPS
Horizontal and Vertical Operation. Single plunger type with air engine. Portable for hydraulic machinery, hydraulic tools and a wide variety of hydrostatic testing operations. Pump discharge pressure capacities 2,000 to 6,000 lbs. per sq. in. Operates from stationary or portable compressor. Requires single connection to air line.

HYDRAULIC POWER TOOLS
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H. K. PORTER COMPANY, INC.
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DIRECT READING LEVEL ROD
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TAKING ELEVATIONS WITHOUT COMPUTATIONS
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EVERY ROD READING AN ELEVATION
ONLY TWO COLUMNS NEEDED IN THE NOTE BOOK—
STATION and ELEVATION
ACCURATE
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ECONOMICAL

LENKER MANUFACTURING CO.
SUNBURY, PENNSYLVANIA

Avoid Legal Pitfalls

Edited by A. L. H. STREET, Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Government Was Not Liable for Delays

THE PROBLEM: *A contract to construct hemp mills for the United States read: ". . . In case the specifications expressly provide that any materials, supplies, equipment, labor, services or any other things shall be furnished by the owner, . . . the owner . . . shall use reasonable efforts to furnish the same when required by the contractor, but neither the owner nor the agent shall be responsible for any delay in the furnishing thereof." At the trial of the corporate contractor's suit for damages there was evidence that it had been delayed, but no showing as to how much was due to fault of the Government and how much to excusable delay. Did the contractor have a valid claim against the Government?*

THE ANSWER: No. (George J. Grant Construction Co. v. United States, 109 Fed. Supp. 245, decided by the United States Court of Claims.)

The court interpreted the quoted clause as relieving the Government from liability for delays not fraudulently, maliciously, or arbitrarily caused, and apparently felt that there were no delays of that nature.

The court thought that there might have been some fault in slow approval of drawings, in determining whether change orders would be made, and whether the contractor's offers for changed work should be accepted. But delays resulting from abnormal weather conditions and from short supply of materials to be furnished by the Government and other causes were excusable.

The court said that even if the quoted clause had not been in the contract, the contractor's damage claim would have been denied because there was no proof to enable the court to determine how much of the delay was chargeable to fault and how much was excusable.

Does Joint Contracting Require Joint Licenses?

THE PROBLEM: *In California, as in some other states, contractors must secure state licenses. Separately licensed contractors formed a joint venture or partnership, but they did not secure a joint license. Did the illegality of the joint undertaking deprive one of the contractors from suing the other for dissolution of the joint enterprise and for an accounting of profits?*

THE ANSWER: No. (Wold v. Luigi Consentino & Sons, 241 Pac. 2d 1932, decided by the California District Court of Appeal, Third District.)

But obviously prudence dictates that, where a joint contract is taken, the contractors inquire of their local legal counsel concerning the need for a joint license. If one is needed, grave risks will be run in proceeding without a license—risks of heavy litigation expense, if not defeat, in attempting to enforce rights against the owner under the joint contract or rights as between the contractors. In this case plaintiff was allowed to sue for an accounting by his associate because both held licenses; and also because the court decided that, though the construction contract was invalid as against the owner, this

(*Continued on next page*)

How Hydraulic Coupling Works in a Power Shovel

The hydraulic coupling type of power take-off has been proven over the years to add greatly to shovel-crane performance and life. It absorbs the impacts and shocks of hard digging, thereby reducing strain and wear on cables, machinery and engine, and it prevents the engine from stalling under any digging or lifting conditions—which is a time-saving, machine-saving feature. These many advantages are readily acknowledged by most shovel-crane men, but even some of those who like what a hydraulic coupling does for them, find it difficult to understand just how it works.

It is a load limit clutch that efficiently transmits full engine power

under normal conditions but "slips" when a shovel dipper, for example, is "hung up" on an immovable rock. This allows the engine to continue to develop further torque, with no abnormal strain on it, the machinery or cables. There is no shuddering to a standstill with stalled engine and the immeasurable strain this puts on the whole machine, as encountered with a friction type of take-off.

Even with a mechanical, band type of slip clutch, which is meant to provide shock relief, a maximum point of shock must be reached first before it becames operative and is released. On the other hand, the hydraulic coupling has an infinite number of points of release, so to speak, which come into operation **before** the point of shock or overload is reached and not **after.** There is no surface friction, no mechanical wear, no overheating of parts. While it is mounted directly on the engine drive shaft, its "cushioning" effect would be as great no matter where it was located in the power train. It absorbs shock in both directions from itself thus giving protection from the dipper teeth to the engine. However, placed where it is, it acts on all phases of operation—hoist, swing, travel, crowd and retract.

(Advertisement)

NEWCO* WIRE ROPE CLAMP & THIMBLE

*trade mark

. . . gives holding efficiency of 95 to 100%.
. . . will not collapse.
. . . no shearing of bolts.

BEARING SERVICE is many times heavier; for example, the ⅝" Newco has a ½" bearing surface! Carries a heavier load, and the original cost is easily absorbed by savings on labor and longer life. In 12 sizes.

⅜" to 1" size STEEL CLAMPS (Approx. 80,000 PSI's)
⅛" to 5/16" MANGANESE BRONZE (Approx. 110,000 PSI's)

See your distributor or write direct to

NEWMAN MFG. & SALES CO.
Dept. CE-9 Box 5939, Kansas City 11, Mo.

This 2-yd. Lorain-820 digs tough limestone and dolomite at France Stone Co., Sylvania, Ohio. Lorain Hydraulic Coupling pays off on tough digging like this.

SMOOTH is the word when it's a LORAIN-820 in rock!

Your eyes and ears can tell you what a beating your shovel takes in rock. It's a tough life — full of sudden shocks and impacts — that only the best design can withstand.

You will see a big difference in Lorain-820 shovel performance . . . the difference made by the use of Lorain's Hydraulic Coupling. This efficient fluid drive *smooths* out the shocks and impacts, *cushions* them before they have a chance to wrack and strain turntable mechanism and cables. Lorain's steady power keeps "hanging on" until the most unyielding rock is in the dipper — the toughest digging cannot stall the engine. Available air controls and air assist of crowd and travel operations make the operator's job smooth and easy. The net result — more rock in the trucks at the end of the day!

See a Lorain-820 in action. Ask your Thew-Lorain Distributor to show you the "smoothest" rock shovel you can buy.

IN ROCK YOU'LL GAIN WITH THEW LORAIN 820

THE THEW SHOVEL CO.
Lorain, Ohio

Avoid Legal Pitfalls

did not prevent enforcement of rights as between the contractors.

The court, after stressing that both contractors were licensed, noted that the particular construction work involved had been completed and paid for and the profits were in defendant's hands. It was also observed that the licensing statutes were mainly enacted for the benefit of the public by assuring the skill, knowledge and responsibility of contractors.

It is to be inferred from the opinion of the court that both contractors were very lucky in securing payment for the work. Had they sued the owner for the contract price, lack of a joint license might have prevented them from collecting.

When Prime Contractors Speak for Subcontractors

THE PROBLEM: *A Federal-airport project engineer issued a stop order to permit correction of faulty drainage specifications, rendering the Government liable for loss sustained by the prime contractor. Could the latter, in suing, also collect extra costs sustained from the same cause by a haulage subcontractor?*

THE ANSWER: Yes. (Warren Brothers Roads Co. v. United States, 105 Fed. Supp. 826, decided by the United States Court of Claims.)

The court cited a decision of the United States Supreme Court (United States v. Blair, 321 U. S. 730, 64 Sup. Ct. 820), where the United States Supreme Court reasoned that, under a contract with the Government, a prime contractor could collect from the Government for extra costs arising through the Government's fault, whether the costs were incurred by the prime contractor or a subcontractor.

The decisive factor is whether or not the subcontract exempts the prime contractor from liability to the subcontractor for damages resulting from the Government's fault. The Court of Claims cited several decisions showing that where there is such exempting provision the prime contractor cannot hold the Government liable for the sub's losses.

When a Partner Dies

Various legal effects of the death of a member of a partnership engaged in engineering operations were considered by the Missouri Supreme Court in the case of Veatch v. Black, 250 S. W. 2d 501. The court decided: The surviving partner is entitled to liquidate the partnership affairs, including the completion of contracts undertaken by the firm. The particular partnership agreement was so worded as to require the surviving partner to share with the estate of the decedent the net profits of contracts completed after the latter's death.

Letter Was No Part of a Bid

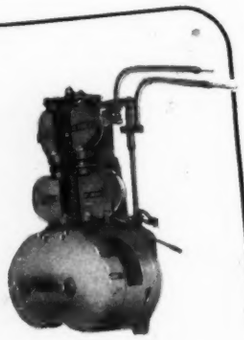
THE PROBLEM: *Bidding instructions and form covering a school building job detailed the manner in which bids should be made. Bids could cover alternatively two types of windows, X and Y. D's bid was lowest because it was based on X windows, while H's bid specified Y windows. On opening of the bids, H asked that a letter accompanying his bid be read. The letter stated that if X windows be substituted, the bid would be less by a certain sum, and this would have made H's bid lower than D's. Did the contracting authority legally ignore the letter and award the contract to D?*

THE ANSWER: Yes. (Gunnip v. Lautenklos, 1953, 94 Atl. 2d 712, decided by the Delaware Court of Chancery.)

H's lawyers mainly argued that, under an asserted custom in bidding, his letter ought to have been considered. The court applied the well settled rule that a custom or usage in a trade or industry cannot be shown for the purpose of contradicting the terms of a contract. It also found that there was no sufficient proof of the alleged custom under which a letter accompanying and an enlarging bid could be considered by the contracting authority. The court said that to have permitted the letter to be read after the bids had been opened would have, in effect, permitted H to make a new bid.

Interest on Claims

THE PROBLEM: *Where a prime contractor retained money claimed by a subcontractor, to whom admittedly part of the same was due, was the subcontractor entitled to interest on that part from the date when he completed his work?*



NEW POWER CONTROL UNIT

Be sure to see the all-new Baker PCU-75 . . . featuring a Multiple-Disc Clutch with higher capacity—3-Way Adjustable Hand Levers—faster, more rugged brakes with single-point adjustment.

Tough Blade
you won't drive thru

Fingertip Control
you don't have to fight

Easy Tilting
you don't have to tighten

Tough Blade—Baker Bulldozers and Gradebuilders feature construction of tougher steel with greater wear resistance. That's why they last longer . . . why operators say "you won't drive through a Baker Blade!"

Fingertip Control—Operators of Baker-equipped A-C Tractors claim they do better work with Fingertip Control. They can *hold* the blade in any position—without settle or "suck-in". Responsive to lightest hand-pressures, the Baker Fingertip Control is one *you don't have to fight.*

Easy Tilting—Two quick-shift pins at the trunnion brackets permit full arc-movement, up to 12" in five positions . . . with full-bearing contact that *can't* work loose—*never* needs tightening.

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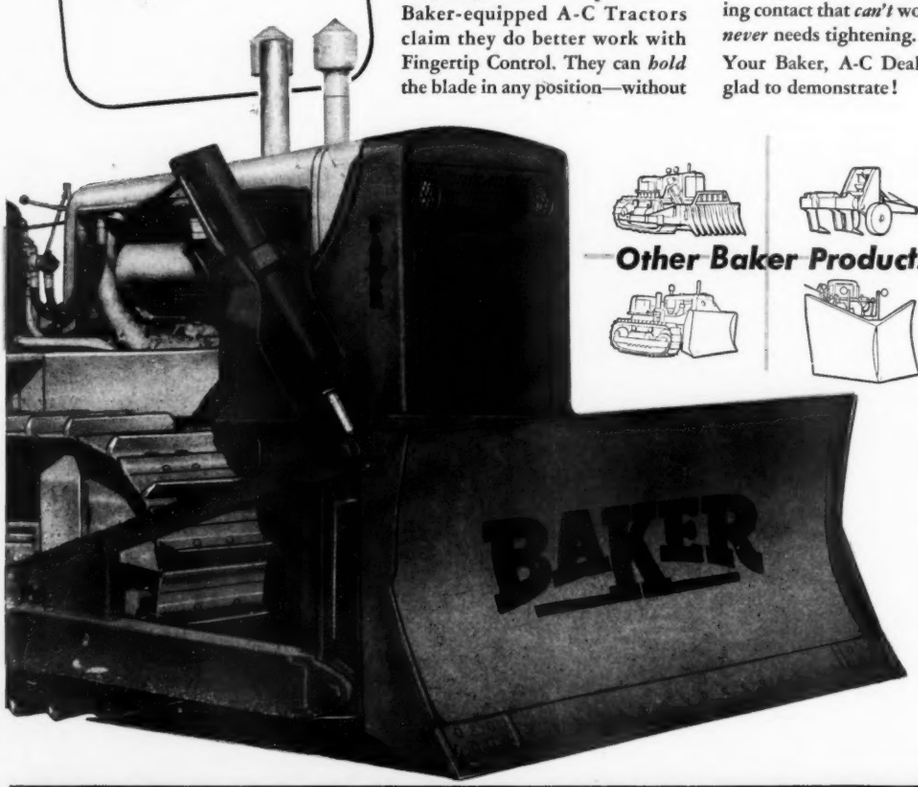

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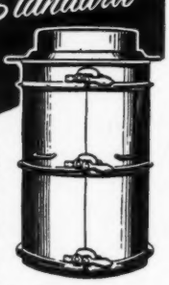

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

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THE ANSWER: Yes. (Paine-Gallucci, Inc. v. Anderson, 246 Pac. 2d 1095, decided by the Washington Supreme Court.)

Workmen's Compensation

THE PROBLEM: *A construction company furnished a crew's job superintendent with a pickup truck for his own use in going between his rooming place and the job site. He was fatally injured while returning to his lodgings from another city where he had driven another employee. Was an award allowable under the Michigan Workmen's Compensation Law on a theory that the accident occurred in the course of his employment?*

THE ANSWER: No. (Graham v. Sonerville Construction Co., 58 N. W. 2d 101, decided by the Michigan Supreme Court.)

Special Awards for Reckless Excavation

THE PROBLEM: *Can an owner and his excavating contractor be held liable in damages exceeding actual loss sustained by an adjoining property owner due to depriving him of lateral support for his soil, where the excavating is done wilfully or in reckless disregard of his rights?*

THE ANSWER: Yes. (Kolodin v. Griffin, 75 S. E. 2d 197. Georgia Court of Appeals.)

The court decided that willfulness was indicated in commencing excavation without giving the neighbor notice of intent to excavate as is required by Georgia statute, and by excavating beyond the line.

Not Liable for Damage Caused by Unusual Rain

THE PROBLEM: *Was a road contractor liable for damage to adjacent property due to unprecedented rainfall, unless negligent construction contributed to the damage?*

THE ANSWER: No. (Ernst v. General Refractories Co. 202 Fed. 2d 485. United States Court of Appeals, Sixth Circuit.)

Need information about equipment? See card bound in at page 18.

There's more to tractors than meets the eye . . .

The real "pay-off" value of any tractor to its owner is how it measures up to the standards set by today's modern production methods.

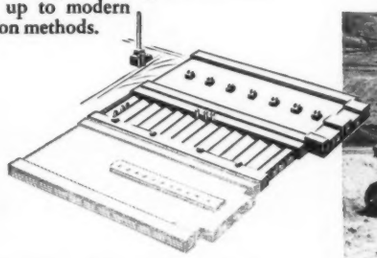
To meet these needs, Allis-Chalmers started from scratch and built *a line of tractors with a future.* Thousands now have been tested and proved on the toughest proving ground of them all, actual jobs, and they have more than measured up to expectations. Owners have found that these tractors set new standards of performance . . . that they give greater output with less down time . . . plus more profit, whether pulling, pushing, digging or dozing. Operators have discovered new ease and comfort in operation, too; and mechanics say these are the easiest-to-service tractors that they have ever worked on.

Yes, the "family circle" of users of Allis-Chalmers tractors is growing constantly. Many users who bought their first Allis-Chalmers tractor only a few years ago now have fleets of them, and many others who operate only one or two tractors have become Allis-Chalmers boosters.

This acceptance is the springboard behind a big plant expansion at Springfield, Illinois, which will enable Allis-Chalmers to meet *your* future needs. See your nearby Allis-Chalmers dealer now for the inside facts on pace-setting tractors that measure up to modern production methods.

This 72-drawbar hp., 18,800-lb. HD-9 is making friends in every field because its power and weight make it ideal for dozens of today's jobs. And, operators can gain up to 25 percent more production on short dozing jobs because they can go from any forward to any reverse speed with just one shift

From haul road to highway to heavy construction . . . wherever big production is essential to the job, this big HD-15 has more than proved its worth. With 109 drawbar hp. and 27,850 lb. weight, it works quickly, efficiently as a dozer, tractor-shovel, puller or pusher.



The 40-drawbar hp., 11,250-lb. HD-5 is a versatile jack-of-all-trades for fleet owners as well as one-man operations . . . with hydraulically controlled Tracto-Shovel, it's equally useful loading bulk materials, dozing, digging basements, dozens of other jobs.

Here's real tractor teamwork . . . four HD-20's in a "train" — three pulling scrapers, one pushing — all working together for big production. With torque converter drive, they synchronize speeds at contact . . . automatically load at the fastest speed that job conditions permit, with less strain on operators and equipment. With 175 engine hp. and 41,000 lb. weight, the HD-20 is today's new yardstick of crawler tractor performance.

ALLIS-CHALMERS

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The new air-powered Kelite automatic parts washer, Model KAW.

Machine Washes Parts

■ A new air-powered washer for cleaning small parts, complete assemblies, and tools is announced by Kelite Products, Inc., 1250 N. Main St., Los Angeles 12, Calif. Parts to be cleaned are placed in a perforated basket which rides on a turntable. Larger assemblies are placed directly on the turntable.

Speed of the parts washer may be varied from 0 to 240 oscillations per minute by dialing the desired speed on the ¼-hp air motor. The motor is operated by air pressures from 30 to 120 psi.

The machine has a solution-saving drain tray which catches the solution drained from clean parts and returns it to the tank. The tank is of heavy gage steel, 20 x 20 x 15 inches in dimensions.

For further information write to the manufacturer and request Bulletin No. 129, or use the Request Card that is bound in at page 18. Circle No. 772.

Thor Branch Office

A new sales and service factory branch office will be opened October 1 in Atlanta, Ga., by Thor Power Tool Co., Aurora, Ill. The Atlanta office will be located at 1363 Spring St., and will serve distributors and tool users in Georgia, South Carolina, and Florida. This new factory branch will be the twenty-second addition to the company's chain of sales and service headquarters and the sixth branch established since 1945.

Waterproofing Membranes

■ Inorganic - glass waterproofing membrane fabric for reinforcing asphalt, coal tar, or plastic coatings is discussed in literature from the Twinsburg-Miller Corp., P. O. Box 207, Twinsburg, Ohio. The bulletin gives technical information and data on Glasfab, an inert waterproofing membrane, loom-woven of inorganic Fiberglas yarn. According to the text, this membrane will not rot and will not char under hot applications of tar and asphalt.

The open-mesh porous weave of the membrane makes for a permanent bond to the under surface by permitting good penetration of the coating. Other characteristics are flexibility and light weight.

The booklet recommends uses such as waterproofing of masonry, metal, or concrete walls, spandrels, lintels, foundations, machinery pits, subways, and tunnels. The product may also be used in roofing and has corrosion-resistant uses in storage tanks and pipe lines.

Charts in the booklet compare the weight, tensile strength, bursting strength and char-resistance of the Fiberglas membrane with cotton, jute, and felt.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 698.

Making a Sanitary Fill

■ How to construct a sanitary fill is the subject of a new booklet available from the Drott Mfg. Co., 3841 W. Wisconsin Ave., Milwaukee 8, Wis. The booklet is intended for city officials, contractors and engineers interested in refuse disposal and in how to transform a rubbish dump into clean, useful land. Phases covered are initial planning, compacting, loading, spreading, and finishing the landfill. The method described features the Drott Bullclam shovel.

This literature may be obtained from Drott, or use the Request Card at page 18. Circle No. 739.

Welding Manual by USBR

"Welding manual", a book intended primarily for engineers and inspectors concerned with the design, construction, inspection, and testing of welded pressure vessels, pipes, and other structures, has been published by the U. S. Bureau of Reclamation.

The 208-page manual is devoted to a discussion of welding as applied especially to steel structures and pressure vessels, and gives information on surfacing, metallizing, and joining nonferrous metals.

The pocket-size addition may be obtained from the Superintendent of Documents, Washington, D. C., or the U. S. Bureau of Reclamation, Supply Field Division, 841, Denver Federal Center, Denver, Colo. The price is $1.75.

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Convention Calendar

September 14-16 AGC Boards
Meeting, Governing and Advisory Boards. Associated General Contractors of America, Edgewater Beach Hotel, Chicago, Ill. H. E. Foreman, managing director, Munsey Bldg., Washington 4, D.C.

September 24-25 American Road Builders
National Highway Conference, County & Local Roads Division, American Road Builders Association, Dell View Hotel, Lake Delton, Wis. B. F. Ostergren, managing director, County & Local Roads Division, ARBA, 918 16th St. N.W., Washington 6, D. C.

September 30 - October 2 Southeastern State Highway Officials
Meeting, Southeastern Association of State Highway Officials, George Vanderbilt Hotel, Ashville, N. C. Robert A. Burch, chairman of advertising and publicity information committee, SASHO, State Highway Commission, Raleigh, N. C.

October 6-7 Roadside Development Course
Twelfth Ohio Short Course on Roadside Development, State Office Bldg., Columbus, Ohio. Wilbur Garmhausen, Ohio State Highway Dept., Columbus 15, Ohio.

October 7-9 Western State Hway. Officials
Meeting, Western Association of State Highway Officials, La Fonda Hotel, Santa Fe, N. Mex. C. O. Erwin, State Highway Dept., State Capitol Bldg., Santa Fe, N. M.

October 7-9 Dept. of the Navy, Bureau of Yards and Docks
Symposium, "Advanced Base Water Supply and Sanitation", U. S. Naval Civil Engineering Research and Evaluation Laboratories, Port Hueneme, Calif. Officer in Charge, U. S. Naval Civil Engineering Research and Evaluation Laboratories, Port Hueneme, Calif.

October 8-10 Concrete Pressure Pipe Assoc.
Fifth Annual Convention and Meeting, American Concrete Pressure Pipe Association, Ponte Verda Inn, Ponte Verda, Fla. Howard F. Peckworth, managing director, ACPPA, 228 N. LaSalle St., Chicago, Ill.

October 12-17 Concrete Reinforcing Steel
Meeting, Concrete Reinforcing Steel Institute, Greenbrier Hotel, White Sulphur Springs, W. Va. H. C. Delzell, managing director, CRSI, 38 S. Dearborn St., Chicago 3, Ill.

October 15-16 Virginia Highway Conference
Virginia Highway Conference, Jackson Memorial Hall, Virginia Military Institute, Lexington, Va. R. P. Ellison, executive assistant, Virginia Department of Highways, 1221 E. Broad St., Richmond, Va.

October 15-17 Meeting of Diesel Operators
Second Diesel Operators' Conference, Student Union, University of Nebraska. Robert A. Ratner, University Extension Division, University of Nebraska, Lincoln, Neb.

October 19-23 ASCE Annual Convention
New York Annual Convention, American Society of Civil Engineers, Hotel Statler, New York, N. Y. Don P. Reynolds, assistant to secretary, ASCE, 33 W. 39th St., New York City.

October 19-23 National Safety Congress
Forty-first National Safety Congress and Exposition, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

October 26-28 Lubricating Grease Inst.
Meeting, National Lubricating Grease Institute, Edgewater Beach Hotel, Chicago, Ill. Harry F. Bennetts, executive secretary, NLGI, 4638 J. C. Nichols Pkwy., Kansas City, Mo.

October 26-29 Public Works Association
Meeting, American Public Works Association, Roosevelt Hotel and Municipal Auditorium, New Orleans, La. O. F. Herrick, executive director, 1313 E. 60th St., Chicago 37, Ill.

October 29-30 American Concrete Inst.
Southwest Regional Meeting, American Concrete Institute, Rice Hotel, Houston, Texas. Frank Chappell, program chairman, Burt Bldg., Dallas, Texas.

November 3-4 Traffic Engrg. Conference
Sixth Annual Illinois Traffic Engineering Conference, University of Illinois, Urbana, Ill., R. K. Newton, supervisor, Engineering Extension, 713½ S. Wright St., Champaign, Ill.

November 10-13 AASHO Meeting
Thirty-ninth Annual Meeting of American Association of State Highway Officials, William Penn Hotel, Pittsburgh, Pa. Hal H. Hale, executive secretary, 917 National Press Bldg., Washington 4, D. C.

November 19-20 Highway and Surveying Conference
Highway and Surveying Conference, University of Florida, Gainesville, Fla. Thomas L. Brandford, associate professor of civil engineering, University of Florida, Gainesville, Fla.

November 30-December 3 American Institute of Steel Construction
Convention, American Institute of Steel Construction, Boca Raton Hotel, Boca Raton, Fla. L. Abbett Post, executive vice president, 101 Park Ave., New York 17, N. Y.

December 14 Bituminous Concrete Producers
Ninth Annual Convention of Bituminous Concrete Producers Association, Waldorf Astoria Hotel, New York City. C. C. Philippi, sales manager, Waldorf Astoria Hotel, 50th St. and Park Ave., New York City.

February 15-19, 1954 Convention of National Ready Mixed Concrete Association and National Sand & Gravel Association
Twenty-fourth Annual Convention of NRMCA and the thirty-eighth Annual Convention of National Sand & Gravel Association, Conrad Hilton Hotel, Chicago, Ill. Vincent P. Ahearn, executive secretary, 1325 E St., N.W., Washington, D. C.

March 15-19 Assoc. of Corrosion Engineers
1954 Annual Conference and Exhibition, National Association of Corrosion Engineers, Municipal Auditorium, Kansas City, Mo. A. B. Campbell, executive secretary, 1061 M&M Bldg., Houston, Texas.

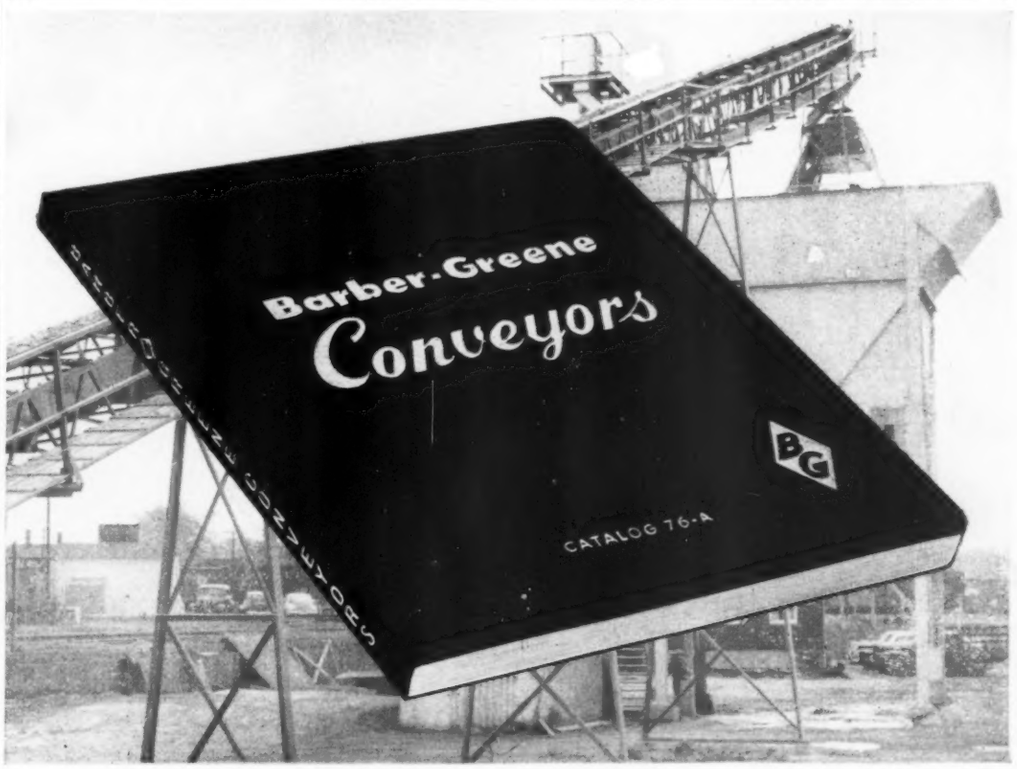
The legislatures of Maryland, Tennessee, and Wyoming have approved constitutional amendments against highway-fund diversion.

Cutless Rubber Bearings

■ A catalog which describes the use and advantages of cutless rubber bearings in equipment is available through Lucian Q. Moffitt, Inc., 333 S. Main St., Akron, Ohio. The bearings are manufactured by The B. F. Goodrich Co., Akron, Ohio.

The catalog recommends uses of cutless rubber bearings in various types of industrial equipment such as pumps, agitators, and similar machinery where bearings can be lubricated with water or by the liquid handled in the equipment. The bearings, which are available in a wide range of sizes, are made of special rubber which resists wear and heat.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 814.



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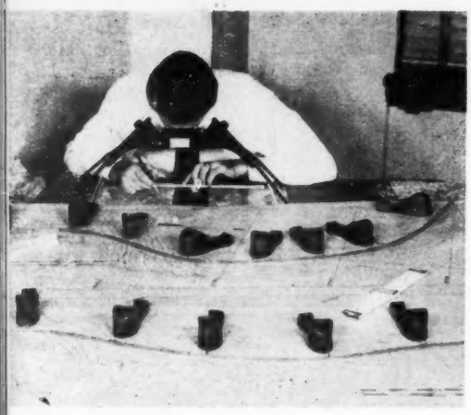
Aurora, Illinois, U.S.A.

Highway engineers in the making

How the United States Bureau of Public Roads trains its highway engineers



A trainee works in the division design office where he assists in designing highways under the direction of experienced resident engineers. This is done during the winter months as part of the first five assignments.

Photo Courtesy of Bureau of Public Roads

THE TRAINING OF HIGHWAY ENGINEERS has long been a major concern of the United States Bureau of Public Roads. As early as 1910 the Bureau was experimenting with methods for developing young civil engineering graduates into competent highway engineers, seeking particularly to shorten the time normally required for the graduate to gather experience.

Today, the Bureau has one of the finest highway engineer training-courses in existence. Each of its graduates completing the intensive course has a background that is at least equivalent to a post-graduate course in highway engineering. In addition, he has acquired a vast store of personal experience.

Trainees for the course are selected on the basis of competitive examinations and personal interviews given annually to college civil engineering students. Each year, thirty graduating students are taken into the training program and given a federal employee rating of GS-5.

The course extends over a period of three years during which time, through five major assignments, the student receives instruction and accumulates experience in every important phase of highway engineering. For the first assignment, the trainee is placed on a forest or park road project where he is made a regular member of the engineering field party. Chances are he will go to one of the rugged northwestern states where his physical conditioning is guaranteed. He usually begins as rodman or stakeman and advances in the party as his experience and ability permit. Transfers, to different jobs are made periodically to give the trainee a variety of experience. He is assigned to location surveys and construction projects, and during winter months when field work is virtually at a standstill, he moves to the division design office. Here, under the direction of experienced resident engineers, he learns the intricacies of highway design. This first assignment normally extends over a period of 16 months and takes the trainee a long way toward becoming a qualified resident engineer. Upon completion of the first twelve months of the course, the trainee is promoted to a GS-7 rating.

Though the sequence of major assignments sometimes varies, the trainee is usually next assigned to the Bureau's Physical Research Laboratory in Arlington, Va. For approximately the five months he spends here, the trainee assists in conducting current research projects and runs numerous tests in the study of road building materials. Instruction from the experienced laboratory staff supplements his practical work. Soils, aggregates, portland cements, and bituminous materials are studied and analyzed during this laboratory assignment.

The third assignment, called Production Cost Studies, consists of a number of time studies of contractor's equipment on the job. Its purpose is to reveal to the cooperating contractor any inefficiencies in his use of equipment, since the Bureau of Public Roads believes that more efficient contractor operations is an-

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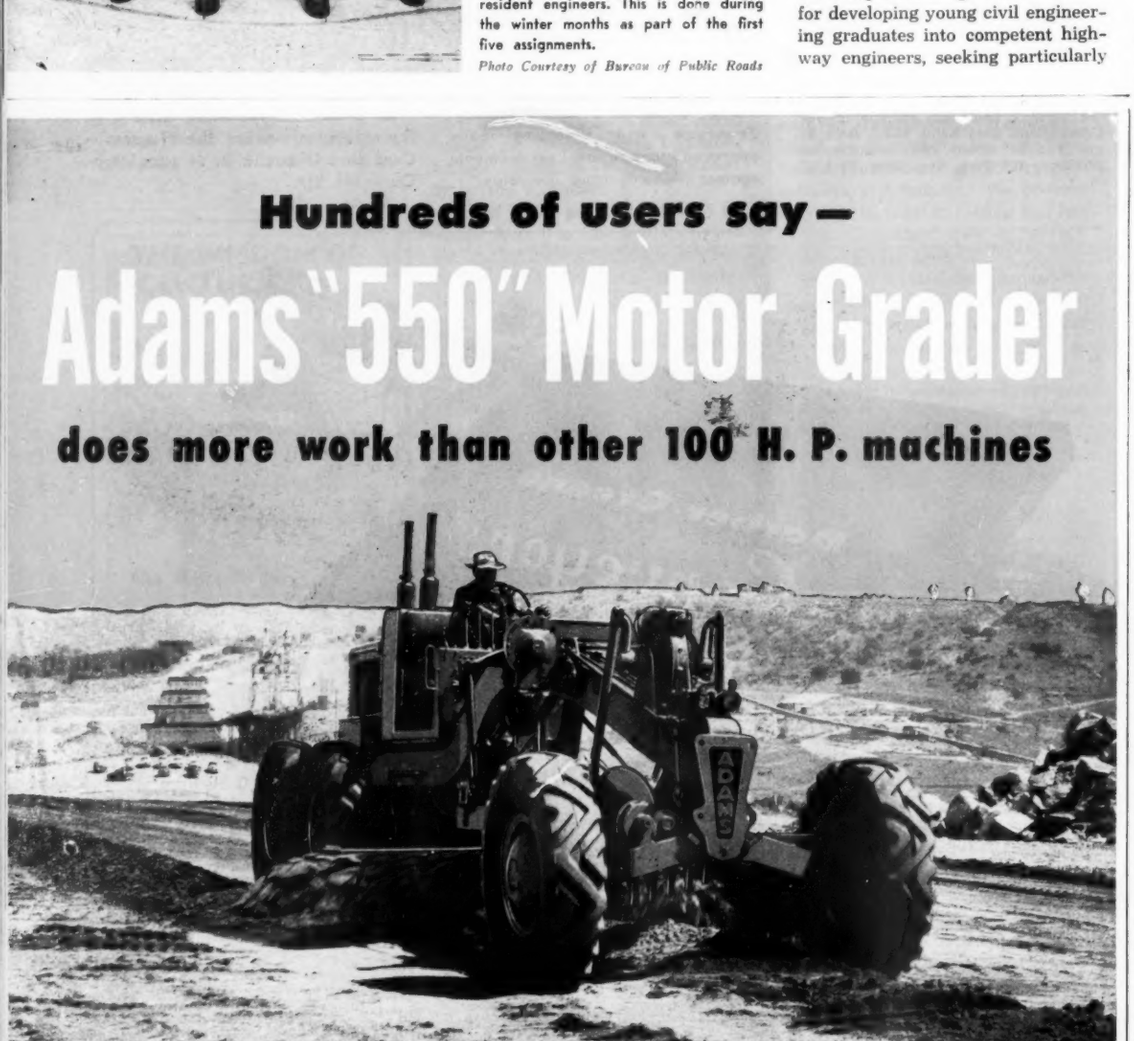

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By MICHAEL LASH, JR., highway engineer trainee

other way to stretch the road dollar. Reports of the studies are treated confidentially; one copy goes to the contractor, one to the Bureau's Washington office, and, if the contractor agrees, one copy is sent to the equipment manufacturer. A typical reply from contractors after they have examined the study report shows that while they are not pleased with the deficiencies revealed, they are glad to get the information which is "money in my pocket".

The trainee usually makes four of five studies during his six months on the Production Cost Studies assignment. During this time he must make frequent moves, and a trainee with a house trailer finds himself at an advantage.

Federal aid is the fourth assignment, and it, too, takes six months. During this time the trainee is assigned to one of the field divisions of the Bureau where he works with experienced engineers in the various phases of Federal aid.

The last assignment is in the Washington office and lasts three months, while the trainee receives instruction in each of the divisions of the Washington office. He is briefed on the legal ramifications of highway work and gets an introduction to the exceedingly complex problems faced by the Urban Division. He is given work assignments in fields of special interests, thus having an opportunity to further explore divisions in which he feels his talents may be best applied.

Finally, the three-year course is completed, and the trainee-graduate is ready for a regular position with the Bureau. After working with the Washington office, the laboratory, Federal aid, and actual highway construction in the parks and forests, he finds a rich variety of jobs open to him. The policy of the Bureau is to place each graduate in a division and geographic location of his choice, insofar as existing openings permit. To date, it has been possible to satisfy every graduate in this regard.

Of the 66 trainees who have completed the course since its inception in 1946, only four have resigned. And each year the Bureau personnel officer gets more and more requests from division engineers for trainee-graduates, proving that this broad background of training and experience is what the Bureau needs.

Trainees sometimes take part in special road studies and experiments, as here, where load test is being made to determine weight-bearing capacity of experimental pavements.
Photo Courtesy of Bureau of Public Roads

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* SALES OFFICE AND WAREHOUSE ** SALES OFFICE

Contractor streamlines office administration

Punch-card accounting, new records-handling methods used on billion-dollar AEC project in Kentucky

THE GREAT SCOPE of the billion-dollar atomic energy project near Paducah, Ky., required considerable preliminary streamlining of both field and office practices to properly administrate such a huge undertaking.

When F. H. McGraw & Co., prime contractor on the Atomic Energy Commission's U-235 facility, began to plan the job late in 1950, one of the first problems it faced was the selection of a fast and accurate method of handling a weekly payroll of 23,000 employees. Considerable investigation was carried out, and eventually the company adopted the punch-card accounting system of the International Business Machines Corp.

The volume handled by the machine accounting section is illustrated by the fact that, placed end to end, the 1952 payroll checks and accompanying stubs would form a strip more than 250 miles long. There are 25 worksteps and more than 1,000,000 calculations between the receipt of employee time records and completion of weekly payroll checks. The fact that this enormous workload was handled with an actual incident of error of 0.00085 per cent reflects a high degree of mechanization and a closely integrated operation.

Payroll, labor distribution, accounts payable, and material distribution are the four major workload items, and they take up more than 60 per cent of the section's operating time. The greater portion of the balance of the time is taken up with various regularly scheduled reports and analyses. In the category of special reports, there were 20 retroactive payrolls completed in 1952, with the retroactive periods ranging from 2 weeks to 9 months, which had to be absorbed in the schedule. All operations consumed around 7,500,000 punched cards in 1952.

The heart of the sections, the key-punch unit, processed about 200,000 cards weekly during the peak period of 1952.

The machine-processing unit consists of a group of tabulators, the machines on which all checks, registers, and reports are written in their final form; electronic calculators, on which the many thousands of daily calculations are completed and verified; and sorters, which sort and keep in order the many master and detail card files in the section, and make it possible to arrange cards quickly in the proper sequence for reports. Collators are used to put together and maintain in sequence the various card files used in preparing the payroll and cost reports. Reproducing summary punch machines, used to make summary cards and reduce volumes of cards to summary form, are also used to reproduce new master files from worn files. An interpreter is employed to interpret the punched holes on the face of the card in readable form because many of the interpreted files are used in other departments for the manual preparation of reports. An individual unfamiliar with the punched holes can readily handle a file of punched cards that have been interpreted.

According to the company, the high degree of success in handling the tremendous volume of work can be attributed to the use of a trained specialist to supervise the activity, close coordination between departments, proper scheduling of avail-

CONCRETE VIBRATORS

Save money with a MALL Vibrator —use less cement, coarser aggregate and produce *better, more durable concrete.* MALL Vibrators, producing up to 10,000 vibrations per minute, get jobs done faster, with less manhours. MALL Vibrators are available in three types—gasoline engine, electric or pneumatic. MALL gasoline engine units are available with attachments for surfacing, rubbing, pumping and many other time-saving jobs. Over a dozen models. Mail coupon—get full facts on all MALL construction tools.

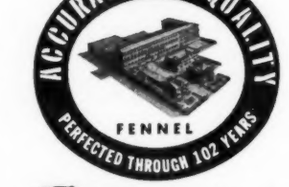
40 Factory-Owned Service Warehouses, Coast to Coast, To Give You Fast, Dependable Service.

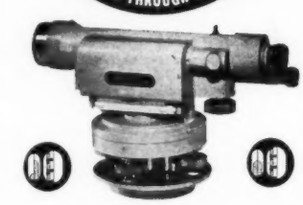
Get More Information NOW!

MALL TOOL COMPANY
7743 S. Chicago Ave., Chicago 19, Ill.
Send name of nearest MALL Dealer and information about MALL
☐ Concrete Vibrators ☐ Chain Saws ☐ Portable Tools

*Name*_____
*Firm*_____
*Address*_____
CU-26

Surveying experts favor
FENNEL
INSTRUMENTS

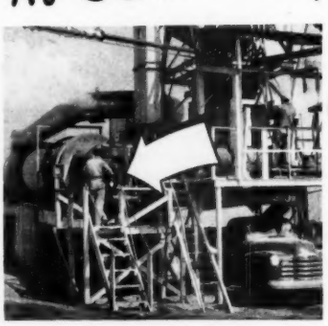




"NITAC" — World's only level with split bubble, erect image. One of many super-fine levels, transits, theodolites, made by Fennel's old-world craftsmen. Performance-proved in 58 countries. Send for particulars, prices.

FENNEL INSTRUMENT CORP. OF AMERICA
478 Water Street, New York 2, New York
Dealers in principal cities

At Sam Finley, Inc., Atlanta, Georgia



Finley Plant No. 1 has a Hopkins Combination Oil-Gas Dryer Unit

"We have 10 Plants using
HOPKINS VOLCANIC
DRYER UNITS"

● Looking for a low-cost burning system for your asphalt plant? Let Sam Finley, Inc. tell you about their experience with Hopkins equipment: "We have ten plants using Hopkins equipment, and in every case, the units have proven very satisfactory to us. We find they have increased production and lowered fuel consumption. Our first Hopkins unit was installed several years ago, and we have been installing them as fast as possible since that time. All of the Hopkins Volcanic units have given us excellent service."

Why don't *you* take advantage of Hopkins' efficient operation, as has the above contractor? A letter or phone call will bring you descriptive literature, complete details, and follow-up by a Hopkins representative.

HOPKINS VOLCANIC SPECIALTIES, INC.
ALLIANCE, OHIO

A view of the machine-accounting room and the staff that handles a weekly payroll of around 23,000 employees at the AEC Paducah Area Project.

able machine time, and the ability to make adjustments quickly and smoothly.

Although the section was set up in an area where machine accounting was practically unheard of, and in spite of emergencies, the checks have always been ready for the weekly payroll.

Records Management

Another phase of office administration which McGraw has modernized on the Paducah job is the processing and filing of records.

The main part of the program is an easily accessible records center to which semi-active and inactive records are transferred. Maximum storage capacity is obtainable through the use of specially designed inexpensive cardboard records storage cases, eight of which hold the contents of one file cabinet. Several thousand of these efficient storage cases are in use resulting in large equipment savings. Indexed locators make all stored records quickly accessible for reference.

One example of records processing is in the combining of all documents relating to a given purchase into a master purchase-order folder. This requires drawing the records from four operation offices (requisitioning, purchasing, expediting, and receiving), eliminating duplicate and extraneous material, and assembling the remainder in order in a single folder. To date, the contents of fifty-eight file cabinets have been processed and transferred to the storage cases. The elimination of duplicate material and extra folders has reduced the volume to the equivalent of thirty-one filing cabinets, a 46.4 per cent reduction. Centering operations such as this enables high organization and close supervision of these activities by trained records specialists. Also, congestion in the operating offices is relieved and substantial equipment savings are effected.

A detailed records inventory showed that operating files were growing at the rate of approximately eight hundred cubic feet a month, the equivalent of one hundred full file cabinets, and that this rate would vary in relation to the total project manpower. The total projected volume came to more than forty thousand cubic feet, which meant high storage and maintenance costs unless the volume was sharply reduced. So, as opposed to the not uncommon policy of saving everything, systematic appraisals of each type of record are being made, and the period each is to be retained is established after top level review and approval. It is estimated that about 85 per cent of the total volume can be destroyed eventually, and that the remaining 15 per cent will meet federal records-retention requirements and include those records which are to be permanently retained. The savings in storage and maintenance costs are apparent and illustrate the economy of having records problems handled by records specialists.

High-Pressure Air Hose

■ A new high-pressure air hose for tunneling and other construction work is announced by the Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 3, Mass. Steel wire used in the horizontal braided construction enables the hose to carry working pressures as high as 2,000 pounds per square inch.

The new hose, called Concord Yellow Jack, has a yellow cover for visibility in underground work. The hose is made in eight different sizes ranging from ⅜ to 2½ inches ID.

For further information write to the company, or use the Request Card at page 18. Circle No. 771.

Vertical Pump Motors

■ A bulletin covering its line of hollow and solid-shaft vertical pump motors is available from The Louis Allis Co., 427 E. Stewart St., Milwaukee 7, Wis. The bulletin shows the various types of enclosures available for these units, and illustrates varied uses for the motors in industry.

Several cutaway illustrations and phantom drawings show details of the nonreverse ratchet, the types of oil and grease-lubricated thrust bearings available, and specific features of the construction of the motors.

To obtain this literature write to the company and request Bulletin No. 1250, or use the Request Card at page 18. Circle No. 717.

Highway Maintenance With Calcium Chloride

■ How to maintain unpaved roads with calcium chloride is covered in a new booklet from the Solvay Process Division, Allied Chemical & Dye Corp., 61 Broadway, New York 6, N. Y. The booklet uses charts, photographs, and nontechnical writing to describe the method, and includes a rate-of-application table for flake calcium chloride.

Different maintenance procedures are divided according to seasons of the year, and appropriate methods are described for each period.

The booklet also lists various other uses for calcium chloride, and details the chemical and physical properties of the compound.

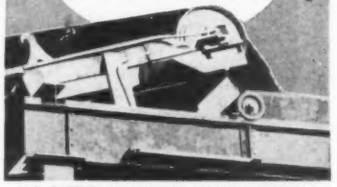
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 794.

Cedarapids

Schrock Built by IOWA

MOTORIZED HEAD PULLEYS

Slash CONVEYOR DOWNTIME 70% to 90%



U.S. PATENT No. 3548399 – OTHERS PENDING

HERE'S WHY!

- No chains, sprockets, sheaves, out in the weather and dirt!
- No chain idlers to keep adjusted or oiled!
- No V-belts to be continually checked, adjusted and replaced!
- No shafts and drives to service and lubricate!
- No motors exposed to damage or weather!

Everything CONTAINED within the pulley!

IT'S *motorized* to eliminate expensive upkeep and cut downtime to the barest minimum on all belt conveyor or belt-bucket elevator operations. *All moving parts are inside the pulley,* enclosed and protected by the pulley shell from weather, dirt and damage. Operation is simple...the pulley shell rotates around the electric motor and reduction gears, which are held stationary by a torque arm attached to conveyor frame. Compact, easy to install, *economical* . . . get complete details from your nearest distributor, or write for Bulletin MP-1 today!

Built for sale in Arizona, California, Nevada, New Mexico, Southern Oregon, Southwestern Utah and Texas by

YUBA MANUFACTURING CO.
(Pulley and Sprocket Department)
Benicia, California

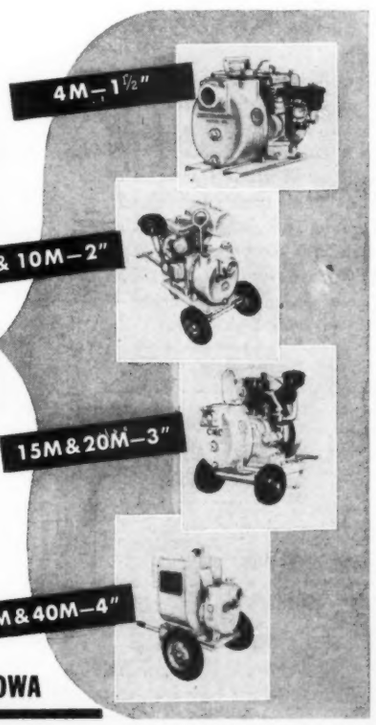
IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

GET FAST DUAL PRIMING–
DEPENDABLE LONG LIFE OPERATION–
and KING SIZE in VALUE!

MC DUAL PRIMERS

Completely New Dual Prime Pump Line Featuring

- Faster Dual Volute Priming
- Self Cleaning Case
- Lighter Weight–Easier to Move
- Unipacked—Long Life Seal
- Half the Parts–Easier to Service
- Unitized Construction–Trouble Free Operation



CONSTRUCTION MACHINERY COMPANY • WATERLOO, IOWA

The Baker-Lull Shoveloader is made in six models of varying capacities, dumping heights, and reaches. It is mounted on one of four tractors: Case, Minneapolis-Moline, Sheppard, or Oliver. Basic attachment is a material loader. Others include a bulldozer, lifting crane, sweeper, and a rear leveling blade scarifier. For further information write to Department KP, Baker-Lull Corp., 314 W. 90th St., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 832.

Carbide-Tipped Bits

■ Specifications of carbide-tipped bits for drilling tile, brick, concrete, granite, or other masonry materials are given in literature from the New England Carbide Tool Co., Inc., 60 Brookline St., Cambridge 39, Mass. The bits are available for holes from ⅛ inch in diameter.

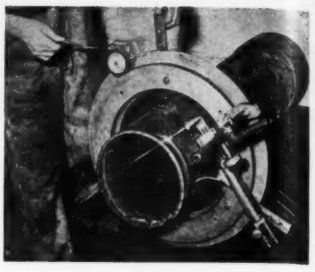
A bit selector guide lists the company's product according to their suitability for soft and medium, hard, and extra-hard masonry. The right type of bit is recommended for different ranges of hole diameters.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 747.

Reo Buys Autocar Branch

As part of expanded activities in the New England area, Reo Motors, Inc., Lansing, Mich., has purchased the former Autocar branch in Worcester, Mass. Jurisdiction will be under Reo's Boston branch, and the present personnel will be retained, headed by Resident Manager A. B. Whitlock.

Reo will continue to service Autocar trucks and handle all Autocar parts in the Worcester territory. In addition, the subbranch will sell all Reo trucks, school buses, and engines, and will service trucks of all makes.



New Acetylene Cutter

■ An acetylene torch cutter which cuts and bevels steel pipe has been placed on the market by the Springload Mfg. Corp., 2412 Aurora, Seattle, Wash. The new torch cutter has a traveling carriage attachment and clamp which holds the torch in a fixed position in relation to the pipe as it rotates. The machine is designed to keep the torch at a proper distance and angle, and is so mounted on a precision universal truck that it holds within 1/64 inch of accuracy. A hand-operated crank is used to advance the torch.

According to the manufacturer, the tool, which is worked by one man, will cut 10-inch pipe in about two minutes. It comes in two sizes: 4 to 12 inches and 12 to 20 inches.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 807.

ANOTHER GW PRODUCT

GAR WOOD Buckeye

GENERAL UTILITY DITCHER

...to dig fast...keep costs down!

This BUCKEYE model 407 will dig straight and curved ditches and undercut obstructions. It is compactly designed for work in close quarters yet handles the widest range of work . . . Digs to 8 ft. depths in 17, 19, 22 and 24 in. widths at lowest possible cost . . . Easy to spot on the job — digs right up to walls and foundations . . . Stable operation on side slopes and low ground bearing pressure to avoid surface damage . . . Handles all types of municipal, utility and pipeline work at minimum hourly expense . . . Built to exacting Buckeye standards set by over 60 years experience in building every known type of ditcher . . . Get complete details from your dealer and remember —

Only Buckeye has a Ditcher for every Ditching Job!

BUCKEYE WHEEL-TYPE DITCHERS

Give you cutting widths of from 10" to the big 51" pipeline machine. You'll find that no matter what type of ditcher best solves your own job problems — BUCKEYE makes it!

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-538

GOOD EXAMPLE

APSCO Model 95 Widener speeds the road widening and asphalt paving contract in Cambria County, Pa. (Putnam & Greene, Inc., Philipsburg — Contractors).

Companion piece, APSCO DTR-552 Trench Roller, with adjustable width rolling design, is, in effect, two rollers in one. Can cut by one half, the usual time required.

Photos—Courtesy CONSTRUCTIONEER

TEAMWORK—RESULTS

Few contractors can afford to overlook the economy and time-saving features of APSCO road widening equipment. Wideners, Base Pavers, Trench Rollers, Tandem Rollers, are seen more and more around the country as more and more contractors see the good examples of team work and results. More information is yours for the asking.

APSCO

ALL PURPOSE SPREADER COMPANY • ELYRIA, OHIO

Distributor Doings

Earl Studdard, recently appointed sales manager for Mustang Tractor & Equipment Co.

Mustang Appoints Studdard

Appointment of Earl Studdard as sales manager has been announced by Mustang Tractor & Equipment Co., 7777 Washington Ave., Houston 1, Texas, distributor of Caterpillar tractors and earth-moving equipment in southeast Texas.

Mr. Studdard has been associated with various Caterpillar distributors since 1945, and has served as sales manager of Stribling Bros., Greenwood, Miss.

New Bucyrus-Erie Outlet

Graze-Dempsey, Inc., 1102 Edgewood Ave., Jacksonville, Fla., is the new Bucyrus-Erie distributor for northern Florida, serving a territory which includes 26 counties. The firm will offer sales and service for Bucyrus-Erie ⅜ to 4-yard shovels, draglines, and cranes. In addition, it will handle gasoline, diesel, and single-motor electric general-purpose excavators, Red Arch dragline buckets, and the all-hydraulic Hydrocrane and Hydrohoe.

Equipment serving facilities will be maintained for the convenience of excavator users and will be located at the distributor's plant. A complete line of Bucyrus-Erie replacement parts will be kept in stock.

Doug-Lynn Distributors

The Doug-Lynn Co., Inc., 2257 N. Main St., Walnut Creek, Calif., has named four distributors in the west for the True-Lay paver. Serving areas in California will be the Edward R. Bacon Co., San Francisco, and Smith-Booth-Usher Co., Los Angeles. Western Machinery, Phoenix, Ariz., and Western Machinery Co., Spokane, Wash., will serve as distributors in their respective territories.

Baker-Lull Names Ryan

Ryan Equipment Co., 3350 Morganford Road, St. Louis 16, Mo., has been appointed distributor of sweepers and the Shoveloader of Baker-Lull Corp., Minneapolis, Minn., manufacturer of materials handling equipment. Territory covered will be eastern Missouri and southern Illinois.

LeTourneau Names Distributor

Atlantic Tug & Equipment Co., with main offices at 1801 E. Erie Blvd., Syracuse, N. Y., and a branch office at Whitesboro, N. Y., has been named as a new distributor for heavy construction and lifting equipment made by LeTourneau-Westinghouse Co., Peoria, Ill.

The company will sell and service LeTourneau-Westinghouse equipment in northeastern New York. Ralph McIntosh is general manager; Junius Stone, sales manager; and Aldo Miles, parts department manager. W. A. Scott heads the service department.

A-C Dealer and Servicer

John L. Callaway Co., 214 W. 13th St., Anniston, Ala., has been named a distributor for Allis-Chalmers Mfg. Co., Milwaukee, Wis. Callaway will handle motors, controls, and transformers in eight Alabama counties.

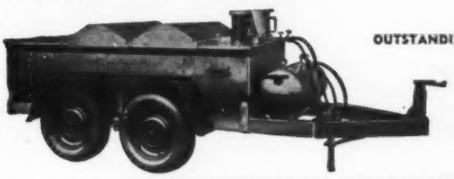
An established Allis-Chalmers distributor, Flushing Electric Corp.,

(Continued on next page)

JUMBO "HEET-MASTER" KETTLES

375-500 GAL. CAPACITY

By Aeroil



OUTSTANDING FEATURES:

- "Hot-Stuff" in 15 minutes!
- Trails at any speed!
- Short turning radius!
- Tandem axle arrangement!
- Low loading height!
- Complete Rockwool insulation!
- Adjustable tow eye!
- Rugged, durable construction!

AEROIL PRODUCTS COMPANY, INC.

75 WESLEY ST., SOUTH HACKENSACK, N. J.

CHICAGO • SAN FRANCISCO • LOS ANGELES • SEATTLE

PITTSBURGH • DEDHAM (MASS.)

WICKWIRE ROPE — A CF&I PRODUCT

Catch fish with wire rope?

Yes, gentlemen, there's more fish caught with wire rope than ever nibbled at a baited hook. Satisfying America's appetite for nutritious seafood is a stupendous job, calling for fleets of fast, powerful trawlers that net their catches in prodigious quantities. To hold and haul in the heavily laden nets, the fishing industry annually uses millions of feet of wire rope.

There's a good chance the fish you eat comes to your table with the help of Wickwire Rope. Because, for over half a century, Wickwire Rope has "grown up" with the nation's fisheries. As in so many other activities where wire rope is used, the men who man the fishing fleets have a high regard for its strength and durability under the toughest conditions.

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver
Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland
Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga
Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

WICKWIRE ROPE

CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1757

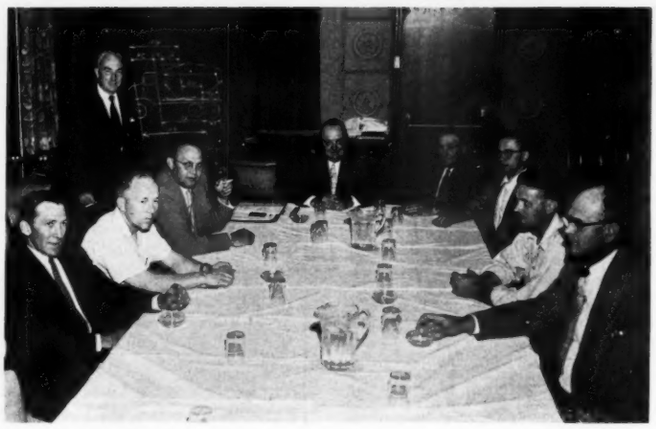
Distributor Doings

45-07 162nd St., Flushing, N. Y., has now been named a certified service shop for A-C motors, controls, and transformers in southeastern New York State.

Schonrock Distributors

Because of the increasing demand for the cable-dump trailers manufactured by Schonrock Equipment Mfg. Co., San Angelo, Texas, several new distributorships are being established here and abroad.

The most recent additions to the new distributorship program are: Brake & Equipment Co., Milwaukee, Wis., encompassing most of Wisconsin, upper Michigan, northern Illinois, and Iowa; Power Brake & Equipment, Inc., St. Paul, Minn., covering Minnesota and northwestern Wisconsin; Commercial Trailer Sales, Inc., South Bend, Ind., taking in the state of Indiana and southern Illinois; Buckanan Equipment Co., Kansas City, Mo., for Missouri and most of Kansas; Leary & Owens Machinery Co., Birmingham, Ala., covering Alabama and west Florida; and W. A. McMillon, Abilene, Texas, for the northwest portion of that state.



Standing above left is Roy Peck, factory representative of the Chain Belt Co., Milwaukee, Wis., the principal speaker at the sales meeting of the Illinois Road Equipment Co., Springfield, Ohio, held in the city's St. Nicholas Hotel. Seated from left to right, are Claude Goss, Lester Bliss, Gil Koehler, Tom Carberry, Mac McCarty, Paul Davidsmeyer, Don McKean, and Hubert Georges.

Standby Service Introduced By Air Compressors & Motors

A nation-wide plan to save air compressor users high costs and operating losses incurred by equipment failure, has been announced by Air Compressors & Motors, Inc., 13710 Aspinwall Ave., Cleveland, Ohio.

The firm offers standby replacement equipment, which is installed quickly on a short-term rental basis while repairs are made or original equipment replaced. In this way, the service allows operations to be resumed without a long delay and obviates the need for investments in new air compressor equipment.

The company is said to maintain one of the largest stocks of new and reconditioned air compressors of all makes and capacities to enable it to meet any emergency.

Hensley Western Distributors

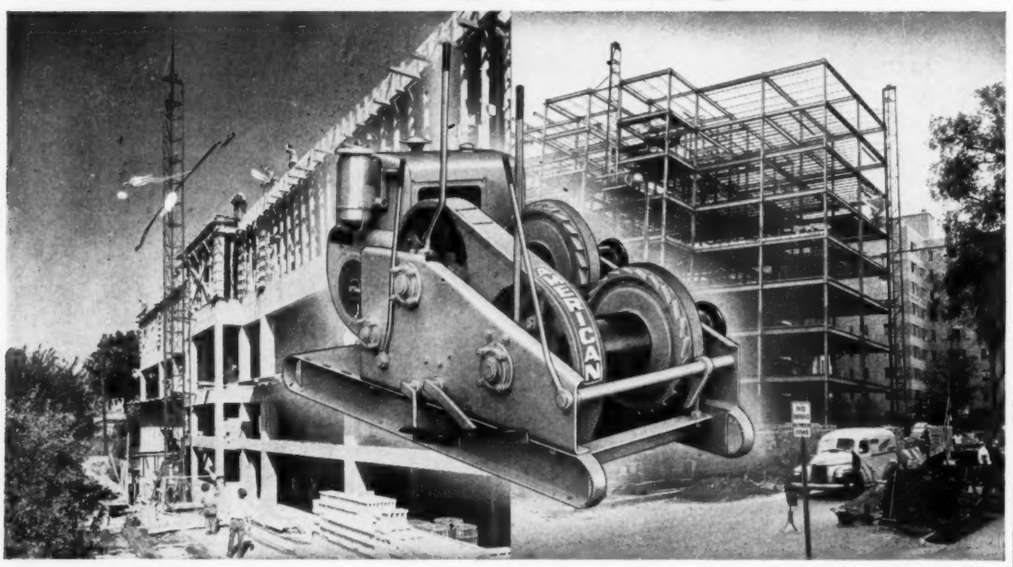
The Hensley Equipment Co., Oakland, Calif., manufacturer of dozer rippers, brush rakes, end bits, track rollers, and tractor attachments, has appointed the following stores exclusive dealers in their area: Loggers & Mill Supply, Arcata, Calif.; Lowry Equipment Co., Redding, Calif.; Fowler Engineering Sales, Ashland, Oreg.; Western Equipment Co., Eugene and Portland, Oreg.; Elko Blacksmith Shop, Elko, Nev.; S & M Supply Co., Grand Junction, Colo.; Gossman Scraper Works, Monte Vista, Colo.; and Joe Smith Machinery Co., located in Denver, Colo.

New Lima Distributors

Baldwin - Lima - Hamilton Corp., Construction Equipment Division, Lima, Ohio, has announced the appointment of two new distributors for Lima shovels, cranes, draglines, and pull shovels.

The Osborne Equipment Co., Knoxville, Tenn., is handling Lima

NOW! Anti-friction Bearings THROUGHOUT!



Lowers Maintenance Time, Increases Production Time!

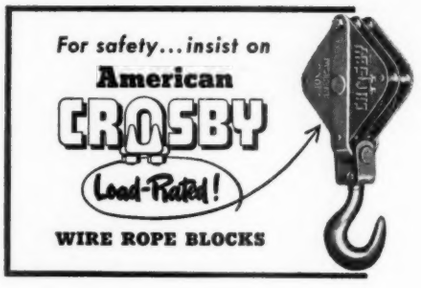
Every rotating part in the new American 25-B and 40-B Hoists runs in an anti-friction bearing! Standard, self-aligning ball bearings that make hoist operation *easier, faster, safer* because they maintain perfect drum, shaft and gear alignment.

Maintenance is cut to a minimum because all bearings are sealed, require lubrication just once a year. No more daily bearing lubrication!

Anti-friction bearings throughout is just one of the many reasons that make American Hoists *first in the field*. See your nearest distributor for complete details on the entire American Hoist line!

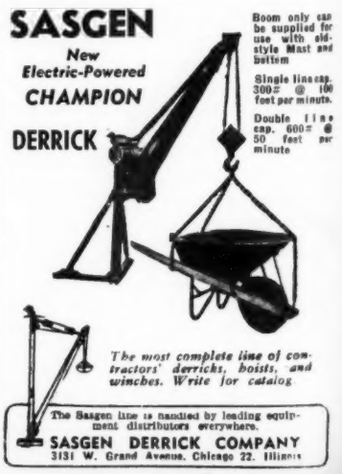
American Hoist

American Hoist & Derrick Co. St. Paul 1, Minn.



NEW! SEALED, SELF ALIGNING, ANTI-FRICTION BEARINGS
NEW! STRUCTURAL STEEL BED AND SIDE FRAMES!
NEW! REMOVABLE CAST STEEL RACHET RING!

SASGEN
New Electric-Powered CHAMPION DERRICK


Boom only can be supplied for use with old-style Mast and bottom
Single line cap. 300# @ 100 feet per minute.
Double line cap. 600# @ 50 feet per minute

The most complete line of contractors' derricks, hoists, and winches. Write for catalog

The Sasgen line is handled by leading equipment distributors everywhere.

SASGEN DERRICK COMPANY
3131 W. Grand Avenue, Chicago 22, Illinois

accounts in six counties in Tennessee and five counties in Georgia. Its sales and service facilities are located at Market and Front Streets in Knoxville.

The Heiner Equipment & Supply Co., with sales and service facilities at 501 W. Seventh, South, Salt Lake City, Utah, are Lima distributors for that state.

Whayne Personnel Changes

Two personnel changes have been announced by the Whayne Supply Co., Eighth and Main Sts., Louisville 2, Ky., distributors for the Caterpillar Tractor, Thew Shovel, Jaeger Machine, and Gardner-Denver Companies.

J. G. Browne, treasurer of the company, has been elected to the board of directors, and Edwin Randle, manager of the company's Ashland, Ky., branch, has been appointed a vice-president.

Mr. Browne was formerly associated with Caterpillar Tractor Co. Mr. Randle was a sales engineer for Whayne prior to his appointment as manager of the Ashland branch.

Marion Shovel Distributor

Marion Power Shovel Co., Marion, Ohio, has appointed Kern-Limerick, Inc., 115 N. Spring St., Little Rock, Ark., as a distributor. Kern-Limerick has well-established service and parts facilities and handles a wide variety of road building and maintenance machinery and contractor's equipment and supplies. The company's territory includes most of Arkansas, with the exception of a few northeastern and northwestern counties.

New Lippmann Distributors

Lippmann Engineering Works, Milwaukee, Wis., has appointed two new distributors to handle its crushing, screening, and conveying machinery. Stockberger Machinery, Inc., 630 High St., Fort Wayne, Ind., will cover the state of Indiana; P. A. Ross Machinery Co., 3120 Grand Ave., Dallas, Texas, will handle the line in north and east Texas.

Hetherington & Berner Dealer

R. E. Brooks Co., Route 17, Hasbrouck Heights, N. J., has been appointed representative of Hetherington & Berner, Inc., Indianapolis, Ind., manufacturer of hot-mix asphalt plants, asphalt paving and patching equipment, and dredging pumps. The territory to be served includes northern New Jersey, New York City, and Long Island.

Wooldridge Names Interstate

Interstate Equipment Co., 131 N. Center St., Statesville, N. C., has been appointed exclusive dealer for that state by Wooldridge Mfg. Co., Sunnyvale, Calif. Interstate will handle all Wooldridge earth-moving equipment, including scrapers, rippers, and bulldozers.

Metalweld Appoints Manager

N. N. Economou has been named sales manager of the Metalweld Construction Equipment Division of Metalweld, Inc., Hunting Park Ave. and Fox St., Philadelphia 29, Pa. He was formerly sales engineer for the organization, exclusive distributor for a number of construction equipment manufacturers, including Hercules, Baldwin-Lima-Hamilton, and Aeroquip.

Cleco Names Distributor

J. Pegely & Son Hardware Co., 6-12 S. York St., Pottstown, Pa., has been appointed distributor of that area for the Cleco Division of Reed Roller Bit Co., Houston, Texas. Cleco manufactures the Cleco and Dallett lines of air tools and accessories.

Front-End Shovel

■ A front-end shovel is illustrated in literature from the Brady Mfg. Corp., S. E. 30th and Granger, Des Moines, Iowa. The unit has a ½-cubic-yard bucket that locks for loading. Twin hydraulic ram-type cylinders on each side give equalized power to keep the loaded bucket from twisting.

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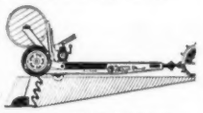

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Clarence Firestone, foreman in charge of equipment for Franklin County, Kansas

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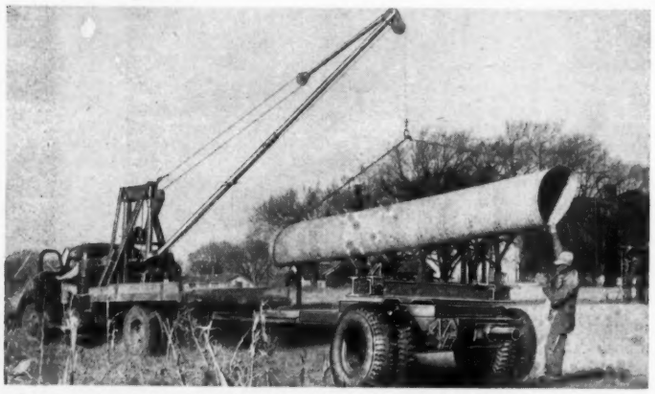

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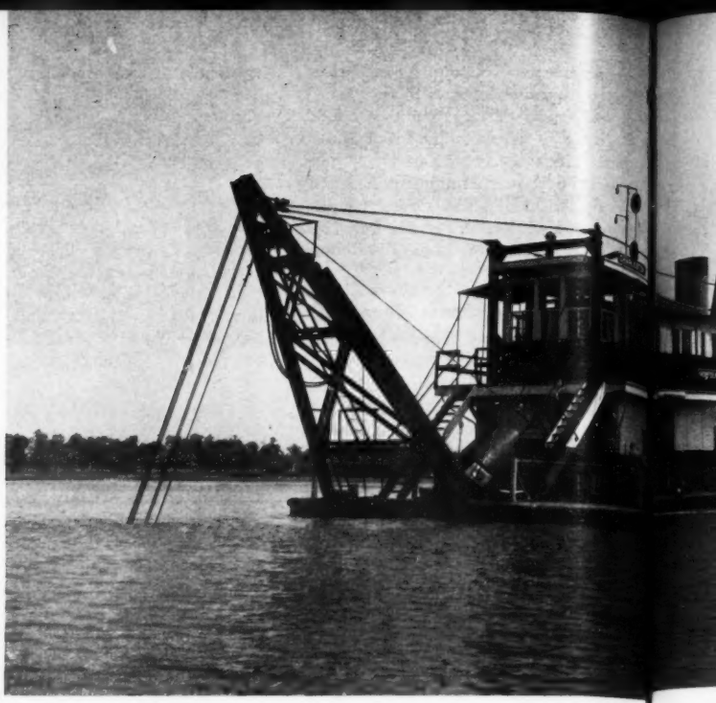

DREDGING—First Step

Unsuitable material is removed from river bottom, and hydraulic fill is placed for approach embankment

By

One of the Major Projects planned by the South Carolina State Highway Department is a new crossing of wide Ashley River at Charleston. The historic old city is at the tip of a long peninsula jutting down into Charleston harbor, with Cooper River forming its eastern boundary and Ashley River flowing past on the west. There is only one vehicular crossing of the Ashley at Charleston, and this bridge is about at the geographical mid-point of the city's western boundary. Consequently, north-south through traffic on U. S. 17, the Coastal Highway, and traffic on east-west U. S. 52 and U. S. 78 is slowed considerably in the narrow streets of the busy seaport.

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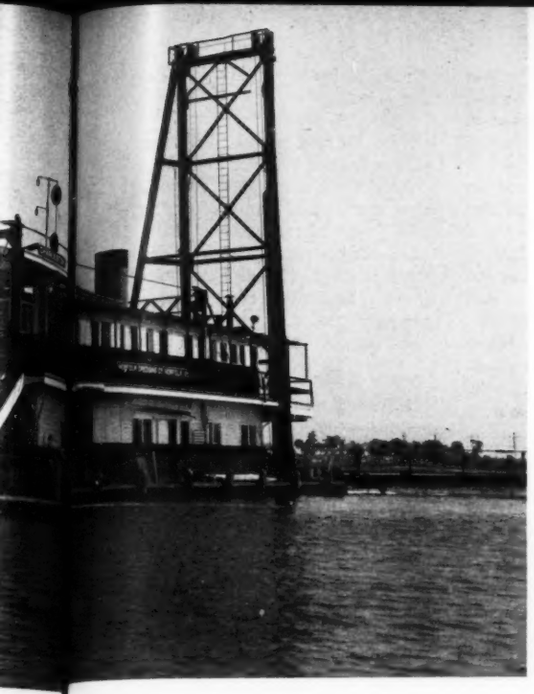

The 18-inch dredge Charleston owned by Norfolk Dredging Co., removes material from the Ashley River at Charleston, S. C., and places it on shore to build up the approaches to a new bridge. *C. & E. Photo*

...tern Bridge Project

By WILLIAM H. QUIRK, Editor

To eliminate this traffic bottleneck, the Highway Department is locating its new bridge much farther upstream, about 5 miles above the existing structure which will continue in service. The new span, which is also north of the Seaboard Air Line R. R. bridge over the Ashley, will provide Charleston with a long-needed bypass. The complete project is 7,056 feet, or about 1⅓ miles in length. It includes a 2,078-foot approach embankment on the west or St. Andrews side of the river; a 2,284-foot bridge over the main channel; and a 2,694-foot approach embankment on the east or North Charleston side.

On the west side, the project will

(Continued on next page)

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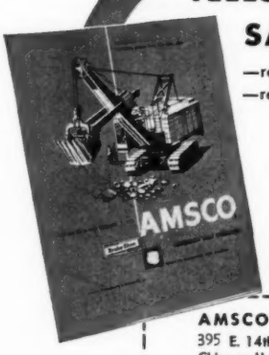

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Dredging—First Step In Bridge Project

(Continued from preceding page)

tie into southbound U. S. 17. On the east side it will connect with U. S. 52, and will cross the tracks of both the Southern Railway and the Atlantic Coast Line R. R. on an overhead structure. The bridge itself, the grade separation structure, and the connections with existing highways will be done under separate contracts.

First Contract

A contract for the approach embankments, the first job to be let on the project, was awarded to the Norfolk Dredging Co. of Norfolk, Va. Estimated contract price was $398,-431. The two major items in the contract included the removal of 273,971 cubic yards of unsuitable material, and the placing of 564,827 cubic yards of hydraulic-fill embankment. The dredging is now completed, and work has begun on the Ashley River bridge structures.

At the job site the river is nearly a mile wide, with a maximum depth of about 17 feet. Mean low water is —2.67; the tide averages 5 feet; and the current ranges from six to seven knots. Near the North Charleston shore is East Marsh Island, separated from the mainland by Accabee Creek. This small body of land, barely awash at high tide, is crossed by the new embankment.

Norfolk Dredging Co. began its work with the removal of muck from this area, to be replaced with hydraulic fill. Most of the muck was pumped out with the Savannah, a 14-inch diesel-powered suction dredge. The material was discharged through a pipeline, and wasted at least 300 feet off the center line of embankment. In places the muck was dredged to —25.0 elevation. The trench left by the excavation averaged 80 feet wide at the bottom, 100 feet at the top, and was backfilled with suitable material. In this operation, the hydraulic fill was continued until the embankment was built up above the water level to a grade of 11.0.

Hydraulic Fill

The finished embankment has a roadway width of 80 feet, a center crown of 6⅔ inches, and 4 to 1 sideslopes down to original ground or river bottom. From the 11.0 level of these approaches, the bridge structure will ascend 4 per cent grades to elevation 58.0, the high point of the span above the main river channel.

For the fill work, the contractor employed the 16-inch diesel-powered dredge Charleston that averaged 8,000 to 12,000 cubic yards of placed embankment a day. Suitable material was obtained from borrow pits, usually located upstream from the job site and fairly close to shore. A pit averaged about 1,000 feet long and 800 feet wide. Below elevation 7.0, the fill consists of sand, shell, or clay marl, with not more than 25 per cent of the material made up of clay and silt. For the upper 4 feet of embankment, the material is mostly sand and shell, and contains no more than 20 per cent clay and silt. The clay content was limited in order to avoid a long drying out period for the material, and to stabilize the fill as quickly as possible.

For short stretches on the North Charleston side, mucking was eliminated by placing 4-foot surcharge on top of the fill. This added weight forced out the softer and unsuitable material at the bottom.

Dredge Charleston

The dredge Charleston was built in 1929 and was acquired by its present owner in 1938. It has a steel hull 110 feet long, 33 feet wide, and 7 feet deep, and draws 5½ feet of water. Above the black-painted hull is the wooden housing, two decks high and painted brown and white—the colors of the Norfolk Dredging Co. Its single stack is buff and black.

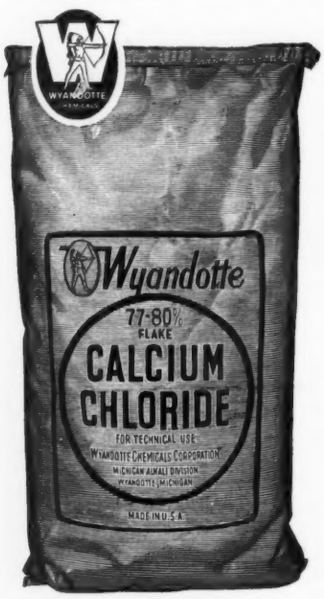
At the bow is a 30-foot A-frame supporting a 40-ton ladder, 65 feet long, that can dig to a 50-foot depth. On this job, the maximum dredging depth was 45 feet, with the average depth between 30 and 35 feet. A depth gage is mounted on the A-frame which is tied back with a pair of 1½-inch cables.

At the stern are two cylindrical steel spuds each 26 inches in diameter, 65 feet long, and weighing 10 tons—supported in wells outside the hull by a 65-foot-high gallows frame. The spuds are hollow, and are reinforced every ten feet with a steel ring.

Diesel Powered

Inside the deck house, about amidships on the center line, is the main engine—a General Motors 12-cylinder, 2-cycle, 900-hp diesel that turns at 744 rpm. Directly aft is another GM diesel—an 8-cylinder, 2-cycle, 350-hp engine that turns at 1,200 rpm. This smaller engine has a direct drive to a Westinghouse 250-kw generator set that is connected to the switchboard in the deck housing starboard aft corner. The diesel-electric unit provides power for the various motors operating the dredge.

The main engine, through a Falk reduction gear and a Kingsbury thrust bearing, has a direct drive to the dredge pump, an Ellicott unit



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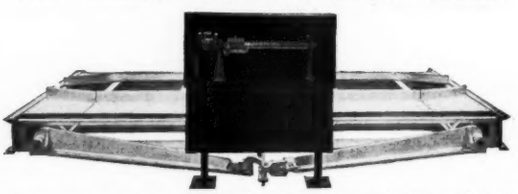

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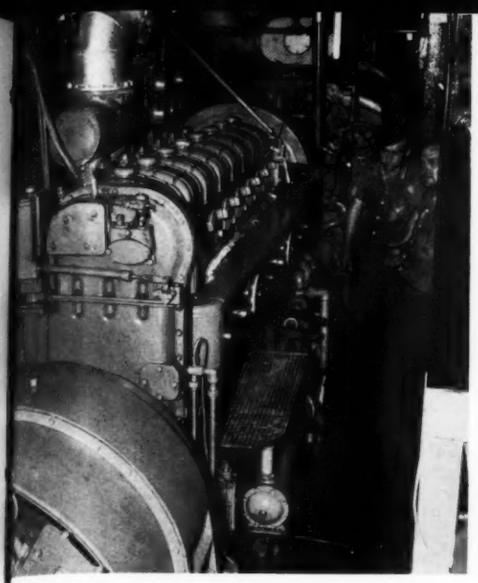

This General Motors 350-hp diesel-electric engine provides power for a number of motors on the dredge. *C. & E. Photo*

that turns at 300 rpm. The pump has an 18-inch suction, a 16-inch discharge, and a four-vane 76-inch impeller.

At the center of the bow is a General Electric 200-hp cutter-head motor that turns at 1,750 rpm. Through a reduction box, this motor drives the cutter head at a speed of 22 rpm. The cutter head is a 5-foot-diameter open-type, equipped with four blades.

The intake line, supported on the ladder, enters the dredge hull and runs directly to the pump. Just forward of the pump is an inspection manhole from which obstacles in the line can be removed. The discharge line leaves the pump at the bottom on the starboard side, ascends to deck level outside the housing, and continues to the stern where it bends sharply to leave the dredge via a swivel joint at the midpoint between spuds. From there it is supported on pontoons. Should any mishap occur to the floating line, flooding is prevented on the dredge by two safety traps in the discharge line.

Besides the cutter-head motor, the other principal electric unit is the G-E 40-hp motor that operates the Ellicott swing-gear. The 5-drum mechanism occupies the most forward position in the deck house. Three drums are in the front row; the outer drums work the port and starboard anchor lines, while the center drum raises and lowers the ladder. Immediately behind the anchor drums are drums for raising and lowering the spuds—one on the port and one on the starboard side. Wire cable of ⅞-inch diameter is used on all gear.

The dredge is equipped with a Caterpillar 115-hp diesel-electric set that serves as a standby to handle lights and service pumps in emergencies. A G-E 60-hp jet motor is sometimes used to pump out gas from river-bottom deposits, and to serve as a booster on the main pump.

On this job, the swing line varied from 300 to 800 feet in length, although the average width of cut was 200 feet. Anchors out on each side weighed 3,000 pounds apiece. When working, the dredge moved ahead in 3 to 6-foot steps, the depth of cut varying according to the material encountered. Forward moves averaged 100 to 200 feet before it was necessary to shift anchors. Vacuum on the pump averaged 12 to 13 inches, while the discharge pressure was around 75 psi.

Pipeline to Beach

The discharge line reached a maximum of 5,000 feet. Average length, however, was 3,500 feet of which half was floating and half was shore line. Norfolk Dredging Co. used 60-foot sections of pipe, connected by steel ball and socket joints, for the floating line. Pipe sections were supported on each side by a cylindrical pontoon—40 feet long and 40 inches in diameter. The pair of cylinders were 10 feet apart on centers, and connected with strongbacks. The latter had saddles in which the discharge line was secured with cast-steel straps. For the shore line, 16-foot lengths of pipe with slip-joint connections were used.

On the work along the river bank and across East Marsh Island, 12-foot-high earth dikes were thrown up to contain the hydraulic fill. Baffle boards were also erected along each edge of the fill in rows 100 feet apart. While this was wider than the designed 80-foot roadway cross section, the extra width permitted the build-up of additional material needed to insure the specified 4 to 1 side slopes. Openings were left in the dikes and in the wooden barriers by staggering the sections of the baffle boards. This permitted water to flow back

(Concluded on next page)

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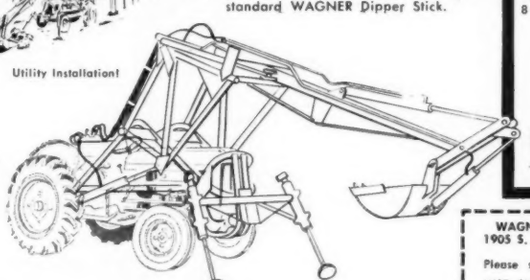

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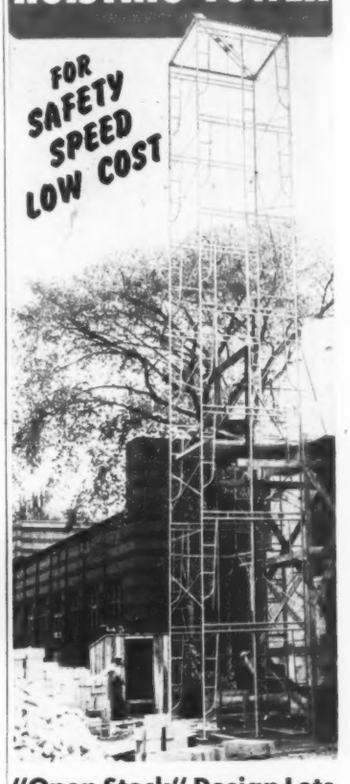

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Dredging at Bridge Job

(*Continued from preceding page*)

into the river, while the material settled to form a compact hydraulic fill. Telephone communication was maintained at all times between the dredge and the pipeline crew on the beach. The wire was strung along the catwalk carried on top of the pipeline.

Auxiliary equipment for the dredge Charleston included an 8-ton floating derrick to pick up the anchors for the swing line; a steel 20 x 60-foot fuel scow with a 30,000-gallon capacity; a steel 20 x 40-foot water barge, 13,000-gallon capacity; a steel 40 x 80-foot equipment and supply barge; the Yankee, a 60-foot diesel tug powered by a Caterpillar 115-hp engine; and the No. 2, a 30-foot diesel pusher or work boat.

Standard Oil Co. of Charleston supplied No. 10 fuel oil for the operation of the dredge, which has a tank storage capacity of 10,800 gallons. Average 24-hour consumption was 1,350 gallons. A crew of 30 manned the dredge for working 'round the clock on three shifts. Crew quarters are on the upper deck.

Personnel

For the Norfolk Dredging Co., Captain Stacy W. Simpson was general superintendent in charge of the project. Captain John Simpson is master of the dredge Charleston, and Kenneth Davis is the chief engineer.

For the South Carolina State Highway Department, R. L. MacNeal was project engineer. The Department is headed by C. R. McMillan, chief highway commissioner. S. N. Pearson is state highway engineer; J. D. McMahan, Jr., is construction engineer; and W. J. Gooding, Jr., is bridge engineer.

Wage and Tax Charts

■ A new bulletin describes a wage and tax calculator made by the Ensee Sales Co., P. O. Box 673, Roanoke, Va. The calculator, in table form, has up-to-date income tax data and computes the social security tax to be withheld for wages earned.

Tables compute total wages earned for any given wage rate, overtime wages at time and one half, and extra or premium wages.

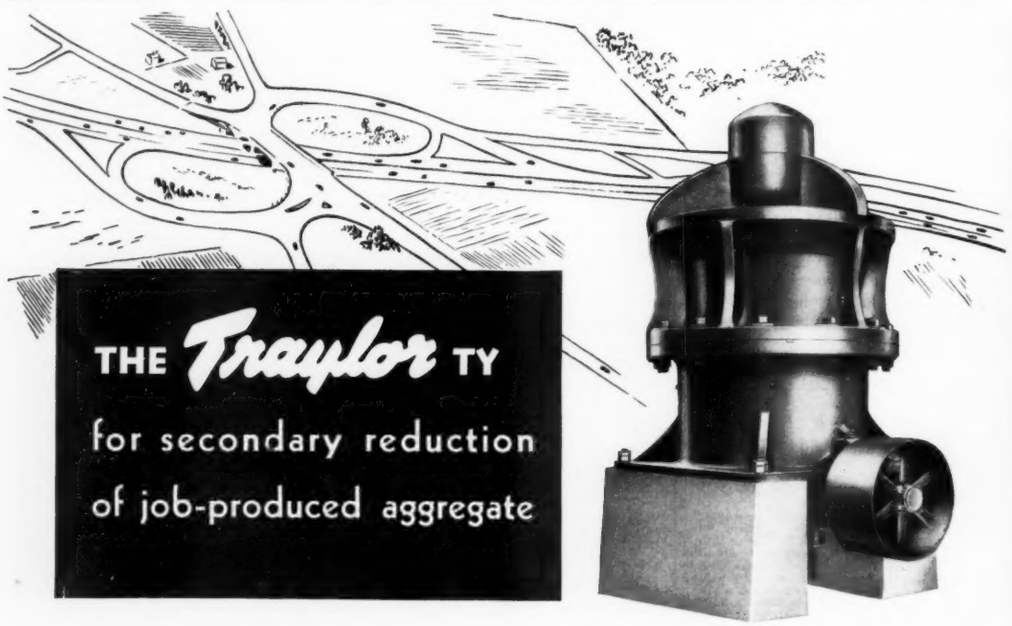
The company offers a set of any five different wage rate charts with six witholding tax tables and one F.I.C.A. tax table in transparent acetate folders bound in a three-ring stiff-back binder. Additional wage rate charts with withholding tax tables are obtainable at extra charge.

The charts may also be obtained on a rental basis.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 777.

Brigance Becomes Chief

John A. Brigance, former assistant chief, Supply Branch of the Galveston District, Corps of Engineers, U. S. Army, has been named chief of that branch. Included among his duties are issuing invitations for bids, preparing drafts of contracts, and distributing purchase orders for materials, supplies, and equipment. Mr. Brigance has been with the Galveston District since 1941, except for the three years that he served in the armed forces.



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for secondary reduction
of job-produced aggregate

...cuts costs of primary stone reduction, too!

The ability of Traylor TY Reduction Crushers to nip larger rocks than other secondary fine crushers means less oversize returning for a second pass through the primary breaker. Traylor Bell Heads and Curved Concaves, by more efficient application of crushing force, produce a more uniform aggregate with less power cost per ton. Put the profit-producing ability of a Traylor TY to work for you. Send for free booklet giving complete information today.

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CRUSHERS

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549 MILL ST., ALLENTOWN, PA.

Send me the latest bulletin on Traylor TY Reduction Crushers. I want to see why a Traylor TY can handle larger rock from the primary breaker.

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*Company*_____

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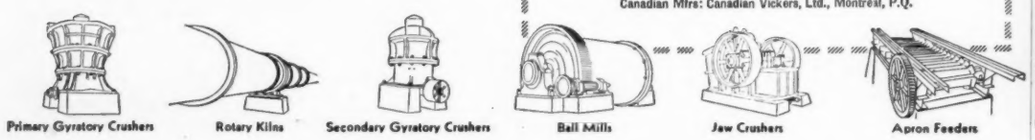

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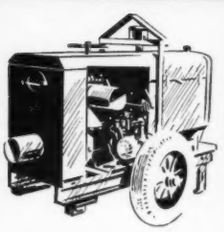
ON LESS FUEL
(it's a "Complete", of course)



Who else but "Complete" could create a wellpoint pump that is such a giant in capacity (up to 1200 gpm) and such a miser on fuel. Who else but "Complete" equips this 6″ suction and discharge unit with this amazingly economical diesel engine! Who but "Complete" would engineer the "Little Giant" Wellpoint Pump with everything needed for long, successful operation—beginning with special vacuum pump priming from an air separation chamber! Who but "Complete" could make it so easy for you to get this pump —*when* you want it—on a *sell* or *rent* basis! Want highest efficiency? Want great capacity? Want fuel economy? Then you want this "Complete" Little Giant Wellpoint Pump. Get the facts. Write today.

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WELLPOINT SYSTEMS

Koehring's Model 205 crawler-type excavator.

Crawler-Type Excavator Has 10-Ton Crane Lift

■ Crane-lift capacity of a new Koehring crawler-mounted excavator has been increased from 7¾ tons to 10 tons. The new unit is rated at ½-cubic-yard dipper capacity for shovel and hoe.

Mechanical improvements in the Model 205 include a simplified upper machinery arrangement that involves only two horizontal shafts. The manufacturer reports that as a result of this redesigning, the excavator's mechanism is more easily accessible for maintenance.

The new unit has fully enclosed gears, automatic brakes, new cab design and operating lever arrangement, adjustable hook rollers, and an electric dipper trip arrangement.

The self-energizing brakes are engaged at all times and require no adjustment for the life of the brake lining. Levers and linkage revolve on antifriction bearings to lessen backlash and to give a better feel of loads. Only four levers are required for controlling any machine movements.

Sliding doors on the all-steel cab can be opened to any position, and larger shatter-proof glass windows provide added visibility.

The four individual hook and turntable rollers are mounted on nonmetallic bushings. Each is adjustable for wear by means of a simple eccentric. The improved dipper trip arrangement operates off an electric solenoid with button control located on one of the operating levers.

Standard Koehring features found in the new model include self-cleaning crawlers with interchangeable shoe widths of 16, 20, and 24 inches, and a choice of diesel, gasoline, or electric power. The unit is convertible from shovel to hoe, crane, dragline, clamshell, and magnet attachments.

For further information write to Koehring Co., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 700.

New Wire-Braid Air Hose

■ A new heavy-duty air hose suitable for working pressures up to 400 pounds per square inch is announced by the B. F. Goodrich Co., Akron, Ohio. The new hose is reinforced with a single braid of high-tensile steel wire and is said to be more flexible than comparable air hoses. A light gray cover increases visibility. The hose is manufactured in ½, ¾ and one-inch sizes. An oil-resistant hose tube permits tools to be oiled through the hose.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 700.

Trailer-Mounted Floodlight Unit

NITE-HAWK

MAKE NIGHT HOURS PAY with this flexible light and power unit. Four corner-mounted, 80,000 C.P. flood lights raise to 8½ Ft. and aim in all directions. Control panel has duplex receptacles for lines to extension lights and power tools — voltage regulator — circuit breaker — fused circuits — many other features. Tows at highway speeds on heavy-duty trailer with leaf springs and retractable caster wheel. This is the finest, most adaptable unit on the market. Dependable, low cost 300 to 10,000 watt gas electric plants also available.

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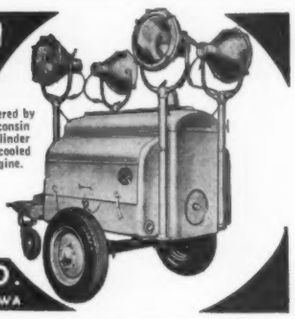

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Southwest Welding Office

W. H. Heffernan has been appointed district sales manager of the newly established New York City sales office of Southwest Welding & Mfg. Co., Alhambra, Calif. He will maintain offices at 11 W. 42nd St.

Mr. Heffernan has had a number of years' experience in the steel plate fabricating business.

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*P.M. = Pressure Metering

Applying bitumen through 2 feet of spraybar as shown may not appear unusual or different, but when the operator can use any length—from 1 to 24 feet—*without changing the pressure* and *without any application adjustment whatever* . . . then there's a difference. It's *Rosco's Pressure Metering Method* that makes that difference.

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It is this Pressure Metering Master Valve, the "heart" of Rosco Distributors, that gives you this built-in control of pressure which is the only accurate method of obtaining precise bituminous application. This is the valve that also directs the flow of material for all of the Rosco Distributor functions.

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Tandem axle, tilt-top. (tow type). Capacities 13 through 20 tons.

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Tandem axle. Capacities 16 through 35 tons. Drop Deck or Flat Deck.

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Single Axle, spring-mounted platform or float.

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MODEL MSO (Drop or Flat Deck) Especially engineered for heavy cantilever loads. Capacities 35 through 75 tons. Axle design gives both lengthwise and crosswise oscillation . . . tires conform more quickly to road irregularities . . . more equal cargo distribution . . . less road shock transfer to payload.

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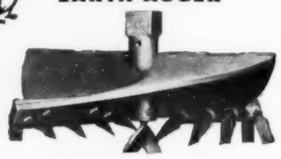

★ Twin helix—no back thrust!

★ Bores true, clean holes in any soil, most sandstones and hardpans, frozen ground, permafrost!

★ All wearing parts replaceable on job!

★ Made in 22 sizes, 9" to 72" hole diameters, to fit all makes of heavy-duty earth boring machines. Larger sizes on order.

THE PENGO CUTTING HEAD

★ Easy installation—welds to your present helix.

★ Bores where you never could before!

★ Wearing parts are replaceable on the job and are interchangeable with PENGO Auger parts. *(Described at left.)*

★ Made in 11 sizes, 8" to 24" diameters. Larger sizes on order.

THE PENGO WISDOM TOOTH

★ All PENGO Augers and Cutting Heads are equipped with the drive-on PENGO Wisdom Tooth, specially designed for use on earth augers; cast from special abrasion and shock-resistant steel alloy for far longer service life!

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Especially designed to bore holes for EXPANDING ANCHORS

★ Double-helix cutting head eliminates back-thrust, quickly bores true and clean.

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★ Extra-long auger with small-diameter center shaft leaves plenty of room for dirt and rocks . . . no clogging or jamming!

GET THE PENGO *"Wisdom Tooth"* IT KNOWS HOW TO BORE HOLES

★ Uses same fast-cutting replaceable PENGO Pilot Bits and PENGO Wisdom Teeth used on all PENGO Earth Augers and PENGO Cutting Heads.

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A Bucyrus-Erie 22-B dragline excavates toe drain at Kirwin Dam.

PRESSURE GROUTIN

A Pressure-Grouting Operation that will prevent large-scale seepage losses through the thick beds of chalk rock that cover the impervious carlisle-shale bedrock on both sides of the main river valley is an interesting design feature of the Kirwin Dam, Bureau of Reclamation project in northwest Kansas. The design, which will save thousands of yards of rock excavation, provides for a 20-foot bottom-width cutoff trench the length of the dam.

Chalk rock is found under about half the length of the dam while on the remainder, ancient stream erosion has cut into the underlying carlisle shale. In the chalk rock areas, a grout cap will be placed in a trench, cut three feet wide and three to eight feet deep into the firm chalk floor of the cutoff trench. In it 560 grout holes, 1½ inches in diameter and up to 110 feet in depth, will be drilled and grouted. The holes will be drilled at an angle to

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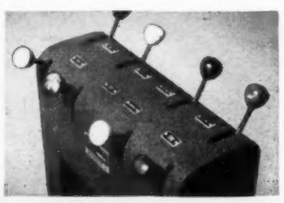
A good hour's production now and then doesn't mean much; it's the total tonnage your asphalt plant turns out at the end of the day that counts. In an 8-hour day, operator fatigue, caused by pulling and pushing heavy levers, can cut your tonnage and profits substantially. Through air cylinder control of bin gates and asphalt injection, MADSEN has reduced this fatigue factor in the new Model 481 Plant to a minimum to give you an extra 100-ton-per-day potential. Combine this with MADSEN'S super-fast asphalt pressure injection system (U. S. Patent No. 1,987,243), and the new MADSEN Twin-Shaft Pug Mill Mixer and you can see why the MADSEN Model 481 Plant is setting records in production and profits! Write for the facts today.

MADSEN "Equipment that Serves"

Photo below shows the central control station in the MADSEN Model 481 Plant. The 8 convenient switch levers electrically energize the 4-way solenoid operated air valves which open and close the various gates and control the asphalt injection.



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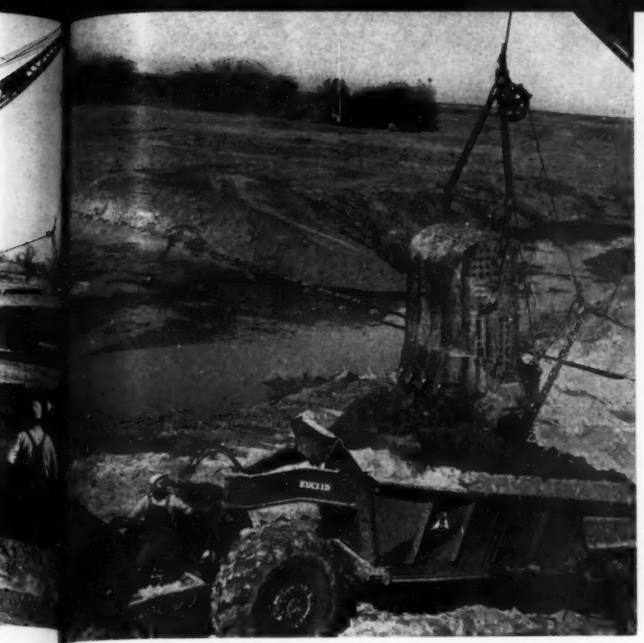

...d bottom-dump Euclid is loaded by a dragline with a Yaun 3½-yard bucket.

...TIN...tops Seepage Losses at Dam

Bureau of Reclamation starts final phase of Kansas flood control and irrigation facility

By L. H. HOUCK

insure intersection with vertical cleavage-planes in the chalk and to facilitate sealing of hidden joints and crevices with grout.

Grout Cap Trench

Excavation for the grout trench amounts to 1,700 cubic yards. The drilling was sublet to Empire Core Drilling Co., Alcova, Wyo., of which C. H. Cannon is general manager.

Grout pipes are anchored in the holes and extend slightly above the top of the trench, which will be poured with concrete to form a grout cap and furnish a seal against the pressure grouting.

Grout-hole drilling in the stage between depths up to 30 feet amounts to 16,700 linear feet; between depths of 30 to 60 feet, 10,115 linear feet; and between 60 and 110 feet, 3,215 linear feet — a total of 30,000

(Continued on next page)

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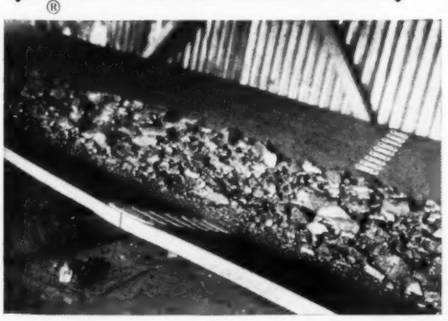
BELT FASTENERS and RIP PLATES



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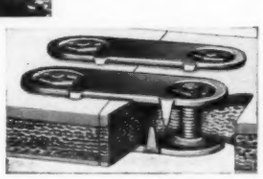

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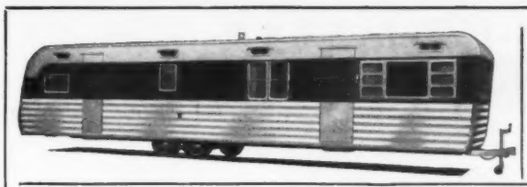

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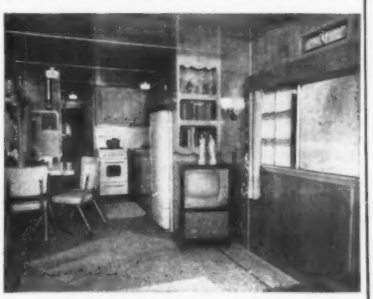

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B-160	160,000 BTU per hour	Indications of carbon monoxide in the exhaust gases of the kerosene fueled Master Space Heater was less than 0.001 per cent by volume . . . as tested by an independent testing laboratory. According to accepted standards this content is one tenth of the amount considered hazardous.	Master Gun Type	Kerosene, No. 1 Fuel Oil or No. 2 Fuel Oil
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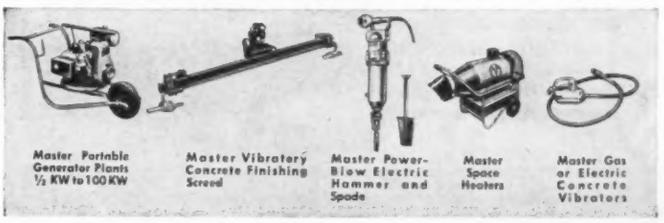

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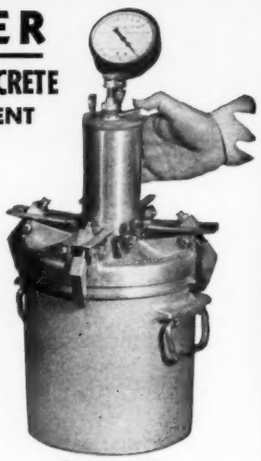

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1197 cu. in. 6-WAK Series

POWER UNITS

WAKU	**Medium Speed, Gasoline**	**206 hp at 1500**
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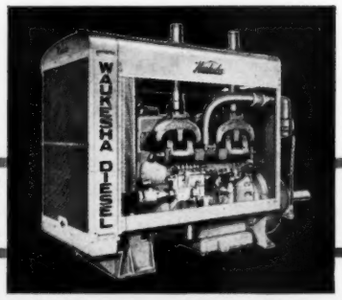
• Super duty! That's what the 6-WAK power units are for . . . and what they do. Here's what they have—every detail built for rough and tumble service . . . crankcase-cylinder block is a deep, thick-wall casting . . . massive, drop-forged, 7-bearing hardened crankshaft . . . pressured oil to every internal bearing, gear, and shaft . . . dual spring overhead valves with Stellite seats . . . cam ground, heavy-duty pistons . . . full-length water jacket, with removable liners . . . and other modern features—for clean burning, high economy, lively performance and long life. Send for Bulletins.



6-WAKDU DIESEL UNIT
6-cylinder, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement.

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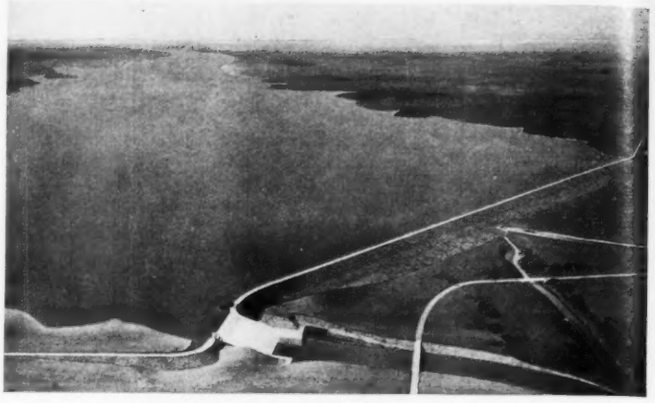

An artist's conception of Kirwin Dam, being built on the Solomon River in northwest Kansas as a part of the Bureau of Reclamation's Missouri River Basin project.

Pressure Grouting Stops Seepage at Dam

(*Continued from preceding page*)

linear feet for the 560 holes. Pipe, fittings, and special grout-outlets amount to 15,600 pounds. Six contraction joints are provided in the cap.

Kirwin Details

The Kirwin Unit is an important irrigation project and a key reservoir in the projected flood control system for the Kansas and Missouri River Basin. Canals and laterals are now being designed which will irrigate 11,500 acres of the rich Solomon Valley lands between Kirwin and Portis, Kans. The unit will make possible a sure source of livestock feed for the area, eliminating the necessity for western Kansas livestock men to go to irrigated areas in Nebraska and South Dakota for cattle feed as they did last year.

The dam is an earth-fill rock-faced structure on the north fork of the Solomon River in northwestern Kansas, and one of three dams on the river that were authorized under the Flood Control Act of 1944 as a part of the Missouri River Basin Project. The others are Webster, on the south fork, and Glen Elder, on the main stream.

Area History

Kirwin Dam replaces a small mill dam which supplied water for a flour mill that began operation in 1872. A roller mill was built here in 1898, with a gasoline-engine auxiliary for low-water periods. Farmers in the region marketed their wheat at the mill. But improved transportation and changed marketing methods meant the end for the mill, and its timbers, still sound after a century, were torn down to make way for Kirwin Dam.

Kirwin Dam rises 117 feet above the stream bed and its crest is 1,779 feet above sea level. It is 12,670 feet long, has a crest width of 30 feet and a base width at maximum section of 1,060 feet. The total volume of earth and rock fill to be placed under the present contract is 7,530,000 cubic yards.

The reservoir will provide 220,000 acre-feet of flood-control storage and 88,600 acre-feet of irrigation storage. At full flood-control storage-elevation of 1,757.3 feet, the capacity is 315,000 acre-feet. The lake will have a 5,000-acre surface area

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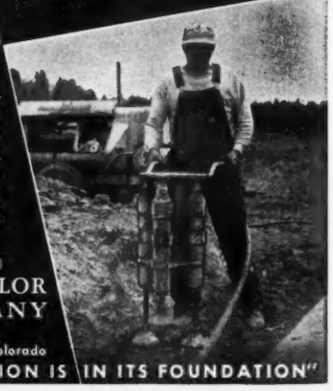
- No compaction job too tough for the SUPER TRIPLEX.
- The most rigid backfill compaction specifications can be positively and easily met with the SUPER TRIPLEX.



Made by the originators of multiple tampers, the SUPER-TRIPLEX incorporates the best features of previous TRIPLEX models, plus new features which make it the outstanding tamping equipment available to contractors today.

WRITE FOR SUPER-TRIPLEX BULLETIN

THE GUNDERSON-TAYLOR MACHINERY COMPANY

The Originators of Multiple Tampers

988 Cherokee Street Denver, Colorado

"THE LIFE OF CONSTRUCTION IS IN ITS FOUNDATION"

and a 66-foot maximum depth at full-irrigation pool stage. A 198,000 super-storage capacity is provided above the crest of the spillway between elevations 1757.3 and 1773. This storage will operate in floods of 400 to 1000 years probable frequency and make the dam safe against maximum possible floods. Completion of the dam will take 2½ years.

Initial work started when Cook Construction Co., Jackson, Miss., began excavation for the foundation and the diversion channel under a $1,226,246 contract on March 27, 1952, and finished October 18, 1952. Contract for completion was awarded to Texas Construction Co., Dallas, Jan. 20, 1953, on a low bid of $6,866,512. Texas entered into a joint venture on the dirt work with Hyde Construction Co., Jackson, Miss. Work started in March, and the job is scheduled for completion in 1050 calendar days.

Spillway Details

The spillway, located at the south abutment of the dam, has an inlet and outlet channel for the passage of flood waters through the structure. This design is more economical than a massive concrete gravity section near the maximum section of the dam, reduces hydrostatic pressures along the earth-concrete contact planes, and reduces danger of seepage at this critical point.

The spillway consists of a weir-crest section 400 feet wide and containing fifteen 5 x 5 foot sluiceways, controlled by sluice gates that are operated from a gallery through the crest section. Overall length of the concrete spillway structure is 446 feet. In elevation, it is 121 feet from the top of the walls at the crest section to the floor of the stilling basin.

The crest rests on firm chalk-rock and has a 5-foot minimum concrete cutoff wall in the chalk. A grout curtain under the cutoff extends to the shale. The stilling basin will be excavated into the underlying carlisle-shale. An inverted filter and tile drain-system under the concrete floor of the chute section will relieve uplift pressures. Excavation for the inlet and outlet channels and spillway is 1,600,000 cubic yards. A total of 20,970 cubic yards of concrete is required for crest section, 13,140 for floors, and 4,030 for walls—a total of 38,131 cubic yards. Six hundred thousand cubic yards of rock excavation from the spillway and outlet channel will be used in the Zone 4 rock-fill, covering the downstream face of the dam and the upstream toe below elevation 1728 where the slope is 8 : 1.

The 15 sluiceways will permit release of flood waters varying from 400 cfs at full-irrigation pool stage to 15,000 cfs at full-flood pool stage. Under maximum possible flood surcharge, with uncontrolled flow over the crest section, the spillway will be reached at maximum possible water surface elevation of 1773.

Outlet Works

The outlet works is located near the maximum section of the dam on the existing river channel and consists of an intake tower surmounted by a trashrack. A vertical shaft, 7 feet in diameter, connects to a horizontal concrete pressure conduit 7 feet in diameter. The sill of the intake structure is 58 feet above the invert of the pressure conduit. The pressure conduit leads to a high-pressure gate in a gate-chamber structure. From this point, the water is carried to the control gate in a 60-inch steel pipe, enclosed in a 9 foot 4 inch diameter conduit. There, it discharges into a stilling well structure 75 feet high.

In the stilling well, water rises to outlets to the river and the irrigation canal. Control gates are 4 x 5 feet high pressure-slide gates, hydraulically operated from a control house above the stilling-well structure. Access to the gate chamber is through a stairwell, built as an integral part of the stilling well structure, and through the conduit.

Dewatering

Excavation for the outlet works turned into a sizeable dewatering job, since the substructure is below ground-water level. Stang Wellpoint Corp., Omaha, received the sub contract from Texas Construction Co., for dewatering. They moved in their pumps and lines with 625 wellpoints installed. Richard Holland, Texas' general superintendent, said the water would be pulled down in two stages of about 21 feet each. Two header-lines were installed and risers were located 4 to 6 feet apart. A dragline with a 3½-yd. Yaun bucket, loaded bottom-dump 15-yd. Euclids as first-stage dewatering lines went in.

Excavation

An impressive lineup of equipment was arrayed against big dirt yardages. Leading the fleet from the borrow area southeast of the dam with a 3000-ft. run to spread, were eight Caterpillar DW 21 tractors with matching No. 21 22-yd. scrapers. They hauled 11,200 cubic yards every eight hours and worked in two shifts. A Euclid loader, being assembled, had ten 15-yard Euclids on hand to serve it.

Texas Construction and Hyde put seven Caterpillar D8 tractors on the job, three Allis-Chalmers HD-20 tractors, two Internationals TD-24 tractors, and five Caterpillar graders.

The main core of the dam is Zone 1 and is a loess-type clay-loam soil. It is compacted in 6-inch lifts by two 20-ton sheepsfoot rollers pulled by one D8 and an International TD-24. Zone 2 is selected sand and gravel, compacted by crawler tractors in 9-inch lifts. Zone 4 chalk fill was placed in 3 to 5 foot layers.

The 30-ft. wide crest was cambered and given a 3-inch rock sur-

(Concluded on next page)

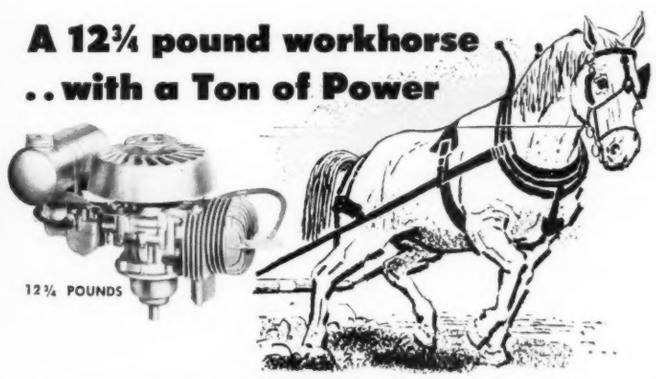
PUNCH-LOK
is the hose clamp

Whatever your clamping requirements, big or little—or in-between—you can get a PUNCH-LOK clamp with quality features for the job. Its versatility is unsurpassed. Whether used as a hose clamp on large suction hose or on small diameter welding hose or for hundreds of construction jobs such as wrapped pipe insulation and holding insulation covers—only PUNCH-LOK can do so many jobs so well and at such low cost.

See Your Near-by Punch-Lok Distributor

PUNCH-LOK COMPANY
321 North Justine Street
Chicago 7, Illinois

A 12¾ pound workhorse ..with a Ton of Power



The POWER PRODUCTS *Lightweight* packs more power per pound

When it comes to lightweight power nothing can touch this engine. Not only is it amazingly lightweight, but it has every important quality feature to assure long, dependable performance

- LIGHTWEIGHT
- MINIMUM EFFORT STARTING
- LONG LIFE, LESS MAINTENANCE
- FULL CARBURETION
- BALL BEARING MAIN BEARINGS
- SEALED DRIP PROOF CRANKCASE
- FULLY ENCLOSED FLY-BALL GOVERNOR
- NO OIL CHANGING OR CHECKING
- CLOG FREE COOLING SYSTEM

For portable equipment, you can't find a better engine for lightweight and dependability.

be modern - go *Lightweight*

POWER PRODUCTS CORPORATION
GRAFTON, WISCONSIN

Pressure Grouting

(Continued from preceding page)

face for an access roadway; there is no public road on the crest. A county road which had to be relocated to make room for the dam was gravel surfaced 3 inches thick and 24 feet wide. Its embankment slopes 3 to 1.

Clay Pipe Toe Drains

The Zone 2 fill makes a pervious toe below the impervious Zone 1 embankment. Its purpose is to reduce hydrostatic pore-pressures near the downstream face of the dam. A tile drain, encased in crushed rock, is placed in a trench near the outer edge of the Zone 2 fill to carry off water that may percolate through the Zone 1 embankment.

The upstream face of the dam above elevation 1,728 will be protected with riprap rock on a crushed-rock blanket. The material will be produced from a quarry some 12 miles west of the dam. The requirements call for 50,600 cubic yards of crushed rock of 3/16 to 3½-inch sizes, and 141,300 cubic yards of riprap grading from ½ cubic foot to 1 cubic yard. The quartzite or opalized sandstone material has a specific gravity of 2.35 or more. Production of the material will extend through winter months when other operations are shut down.

Crushed limestone aggregates for concrete are being shipped to the job site from a commercial quarry in southeastern Kansas. Sand for the concrete aggregate is being processed from a pump pit at the damsite. The concrete plant was just arriving when the job was visited by C&E. Mixers are two 28S Smith while the batching plant is a 6-bin Johnson with manual controls and overhead screens.

Other Equipment

Other equipment being placed in service included a Le Roi 365-cubic-foot and a Gardner-Denver 500-cfm air compressor, a new Buda earth drill, Gardner-Denver and Carver 6-inch centrifugal pumps, and a 4-inch Rex pump. The Rex, located on a water-filled excavated section, was pumping water for consolidation of some completed fill.

Two 802 Lima shovels were being moved into the outlet works. Lighting for the night shifts was furnished by Kohler and Caterpillar light plants.

Quantities and Personnel

Excavation: outlet, spillway dam foundation, grout cap	2,784,200 cu. yds.
Borrow, stripping, and excavation	7,577,000 cu. yds.
Zone 1 fill	6,320,000 cu. yds
Zone 2 fill, sand and gravel	184,500 cu. yds.
Zone 3	737,400 cu. yds.
Zone 4 chalk	937,500 cu. yds.
Crushed rock and riprap	191,900 cu. yds.
Grout hole drilling	30,000 li. ft.
Portland cement for grout	31,000 sacks
Concrete grout cap	1,700 cu. yds.
Concrete	41,621 cu. yds.

The Bureau of Reclamation was represented on the Job by William J. Quinn, construction engineer; Glenn E. Thomas, office engineer, and Homer Phillips, field engineer. Avery A. Batson is Region 7 director, Denver.

The contractors have 300 men on the job. Richard Holland is general superintendent, and John Wiley is project engineer for the Texas Construction Co., Dallas, Texas. Robert Hyde is president and Johnny Stockton, field superintendent for Hyde Construction Co., Jackson, Miss.

New Edition on Pumps

A second edition of "Pumps", by Frank A. Kristal and Fred A. Annett, has been published by McGraw-Hill Book Co. The book covers pumps of all designs and types, explains what kinds of pumps are available, and how they can be selected, installed, maintained, and operated.

Intended for use by designers, manufacturers, sales representatives, and operators, "Pumps" also discusses a wide range of pump applications—boiler feed, deep well, sewage and sludge, gasoline line, fire, and many more.

The book has been revised to include new designs, materials, and applications developed since the first edition was published. It sells for $6.50. Further details can be obtained from McGraw-Hill Book Information Service, 327 W. 41st St., New York 36, N. Y.

New S-A Division Formed

A Standard Products Division has been formed by the Stephens-Adamson Mfg. Co., Aurora, Ill., manufacturer of centrifugal loaders, car pullers, bin level controls, hoists and winches. The new department is organized to handle the company's full line of equipment. A complete listing of units available from the department can be obtained by requesting Bulletin 653 from the company.

Booklet on a Scriber And Lettering Guides

■ Lettering guides and a new scriber are discussed in literature from The Wood-Regan Instrument Co., Inc., Nutley, N. J. The lettering guides are made of a strip of highly seasoned Pyralin with top and bottom surfaces of thin white stock and a center core of dark green. The characters are machine engraved with the upper surface penetrated so that the characters are clearly and sharply defined. The sizes range from .080 to .625 inch for lower case letters.

The lettering guide rests on the upper surface of a guide holder and is moved to the right or left with the fingers of the left hand. It is not necessary to hold the guide holder in position since rubber and cork composition runners keep it in place.

The new Wrico scriber makes possible a wide range in the size and slope of the characters made with each lettering guide. Characters can be condensed or extended and the slope changed to produce any desired effect.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 752.

Steel Joist Institute Directors Re-elected

At an annual meeting, A. Carl Weber was re-elected president of the board of directors of the Steel Joist Institute, DuPont Circle Bldg., 1346 Connecticut Ave., N.W., Washington 6, D. C. Mr. Weber is director of research and engineering sales for the Laclede Steel Co., St. Louis, Mo.

Re-elected also were James D. Maitland, vice-president; and C. H. Luedeman, secretary-treasurer. Professor J. W. Hubler, chairman of the department of civil engineering at Washington University, St. Louis, Mo., was re-appointed consulting engineer for the Institute.

"Tag Master"
"Tops" in Bucket Control

As your clamshell "flies through the air with the greatest of EASE," watch the eyes of the "sidewalk superintendents" POP!

You, too, will be delighted with the EASE with which you *cast* the clamshell, or *snub* it, or *twist* it, getting into hard-to-reach corners and picking up hard-to-manage rocks.

You'll find the tagline pull *uniform* at all bucket levels and *adjustable* to fit any job.

In addition you can use your TAG-MASTER as a *dipper-trip!*

Some of these advantages YOU NEVER HAD BEFORE . . . unless you have already used a TAG-MASTER!

For more details about this combination tagline winder and dipper trip, mail the coupon below.

MORIN MFG. CO., INC.
WEST SPRINGFIELD, MASS.

Please send "Tag Master" details.

Make of our machine .....

Size & model .....

Name .....

Address .....

This Booklet Shows You How Your Company Can
SAVE 83% ON BRUSHCUTTING COSTS!

with amazing, power-driven
BRUSHMASTER®
THE SAFE, EFFICIENT METHOD OF MAINTAINING RIGHT-OF-WAY CLEARANCE

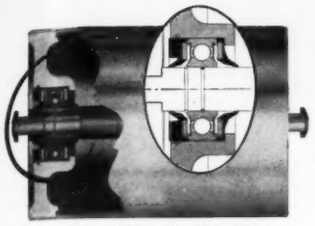
ONE MAN ACCOMPLISHES THE WORK OF
6 HAND-CUTTERS!

Hundreds of American industries are showing big savings with the Brushmaster Saw. It cuts brush, from matted grass to saplings 4" in diameter or over, including vines, honeysuckle, thorns, etc. It's *safe* . . . operator can not come into contact with saw blade! It's *mobile* . . . goes anywhere a man can walk . . . operates freely from right to left, close to ground or overhead! Vibration-free, clutch-controlled, positive drive.

FREE!
This colorful booklet tells how machine magic has made all previous methods of brushcutting obsolete. Send for it today.

BRUSHMASTER SAW, INC.
95 EMERALD ST., KEENE, N. H.

Subsidiary of Harrington & Richardson, Inc., established 1871. — Manufactured and sold in Canada by H&R Arms Co., Ltd., Montreal, Canada



Cutaway view of Transall idler roll.

Conveyor Belt Idlers

■ A new line of belt conveyor idlers is announced by Transall, Inc., P. O. Box 1588, 153 N. 11th St., Birmingham, Ala. The new idlers feature molded bearing cavity closures on both sides of each bearing for protection against abrasives and moisture. The bearings are permanently sealed and packed with synthetic lubricant.

According to the manufacturer, an improved method of mounting the bearing eliminates the possibility of axial preloading in the assembly.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 839.

Roofing Material

■ A new roofing material made from wood fibers and chemical is said not to rot or weaken with age, and is fire and termite resistant.

Tectum is light in weight and is said to insulate almost as well as cork. Humidity and temperature changes affect it little. The material has sound-absorbing acoustical qualities.

For further information write to Tectum Corp., 105 South Sixth St., Newark, Ohio, or use the Request Card at page 18. Circle No. 745.

ASTM Publishes Symposia

The American Society for Testing Materials has made available two pamphlets on soil engineering.

"Symposium on Direct Shear Testing of Soils" includes six papers, each showing examples of the successful use of direct shear methods, and outlining the advantages, disadvantages, and limitations of direct shear testing of soils in the field of foundation engineering. The 96-page booklet sells for $2.00.

The second pamphlet, entitled "Symposium on the Use of Radioisotopes in Soil Mechanics", comprises three papers which represent the research results of independent development and use of apparatus which applies certain phases of atomic science to this important problem. This 40-page edition costs $1.25. Both symposia may be obtained from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Data on Dump Trailers

■ Two dump-trailer bodies that are offered complete with telescopic hoists are shown in literature from the Hercules Steel Products Corp., Galion, Ohio. One is a 17-foot, 17-cubic-yard, single-axle unit, and the other a 20-foot, 20-cubic-yard, tandem-axle unit.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 783.

Tractor Cable Controls

■ Caterpillar rear and front-mounted cable controls are the subject of a new booklet released by Caterpillar Tractor Co., Peoria 8, Ill.

Several cutaway and model views illustrate the advantages of the No. 24 front-mounted unit and the No. 21, 25, and 27 rear-mounted controls. A table of specifications designates the Caterpillar tractor for which each model is recommended and gives details on line speed, cable sizes, and dimensions of parts.

To obtain this literature write to the company and request Form 30598, or use the Request Card at page 18. Circle No. 838.

LOOK FOR

REINFORCED CONSTRUCTION

IN YOUR BOOTS, TOO

That's what you'll find in Red Wing's tough Chrome leather Engineer's Boot — plus day-long walking comfort with triple-ribbed spring steel shank. Oak leather or composition sole. Logger or regular heel.

look for the RED WING label!

LOOK FOR THE RED WING LABEL AT YOUR DEALER'S TODAY! It's your guarantee of added comfort, lasting fit and rugged wear.

RED WING SHOE COMPANY

103 Main Street • Red Wing, Minnesota

Makers of Fine Quality Boots and Shoes since 1905

22 HEILINERS

NEW JERSEY

SPEED EARTHMOVING ON THE

GARDEN STATE PARKWAY

BIG earthmoving jobs like the $300,000,000 Garden State Parkway, and big-producing Heiliners just naturally go together. Heiliners combine all the advantages of fast loading, big capacity, plenty of power, high speed, and "tilting floor" positive forced ejection (the simplest and most efficient known!) with a host of other features that pay off in profit on any job.

- **8 HEILINERS for GEORGE M. BREWSTER & SON, INC.** of Bogota, N.J. are operating near Red Bank, N.J., moving over a million yards of sandy clay loam at a rate of 225-cu. yds. per hour per machine. Loading time per unit averages 45 seconds in 60 ft. and the 1200-ft. round trip time average is 3 to 3½ minutes.
- **5 HEILINERS for CONSTRUCTION AGGREGATES CORP.** of New York are moving 112-cu. yds. of sand per hour per unit on the section of the Garden State Parkway south of Morganville. Loading time averages 40 to 65 seconds in 200 ft., and average cycle time for the 8400-ft. round trip is 8 minutes.
- **4 HEILINERS for FRANK STAMATO & CO.,** of Lodi, N.J., are working near Eatontown and in Ocean County where the contractor had to meet a variety of tough conditions ranging from very wet to dry sand and gravel.
- **3 HEILINERS for J. F. CHAPMAN & SON** of Hillside, N.J., have contracts for grading, draining and structures near the north end of the Parkway working in material ranging from rock and shale to sand and gravel.
- **2 HEILINERS for REID CONTRACTING CO.** of Woodbridge, N.J., are operating near Toms River, and have a lot of tough conditions to meet such as a high water table, sand and gravel with clay and new haul roads.

THE HEIL CO.

DEPT. 393, 3003 WEST MONTANA ST., MILWAUKEE 1, WISCONSIN

Factories: Milwaukee, Wis. — Hillside, N. J.

Sales Offices: New York, Union, N.J., Washington, D.C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle; Rio de Janeiro, Brazil

R-20

Line of Concrete Pipe

■ Concrete pipe in a variety of forms is illustrated in literature from the Universal Concrete Pipe Co., 297 South High St., Columbus, Ohio.

Among the products shown are plain and reinforced-concrete sewer pipe, culverts, site-cast pipe, large diameter pipe, long length pipe, flat base pipe, and special pipe for carrying corrosive industrial wastes. Rubber gaskets, river weights, precast package bridges, and concrete cribbing are additional products.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 770.

Use Swenson self-feeding material spreaders for fast, easy application of salt, chloride, sand, cinders, gravel or a combination of these materials

Free Information

Swenson Spreader & Mfg. Co.

Lindenwood, Illinois

The Wagner Model WT swing trencher.

Trenching Attachment

■ A new trenching and ditching machine that attaches to standard tractors converts to a heavy-duty loader with the addition of a standard loader dipper—stick assembly. The Wagner Model WT swing trencher has a maneuverable boom with a lateral swing of over 30 degrees to the right or left of the trench line. Maximum dump height is sufficient to load trucks.

The mechanism is powered by a hydraulic system and is designed to handle a wide range of bucket sizes and types.

Specific uses recommended by the manufacturer are pipe laying, installation of septic tanks, and similar applications.

The trenching mechanism fits most popular wheel and crawler tractors including the Ford, Ferguson, Oliver, Case, International Harvester, Allis-Chalmers, and Minneapolis-Moline tractors.

For further information write Wagner Iron Works, 1905 S. First St., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 756.

Booklet on Form Erection

■ A booklet that describes a method of constructing, erecting, and stripping foundation forms is available from the Hummel Form & Clamp Co., 4550 W. Patterson Ave., Chicago 41, Ill. The booklet features the Hummel bar clamps and spring-snap tie holders. The bar clamp or panel lock is a shaped piece of ½-inch steel bar-stock that eliminates wedges, pins, cut nails, or pieces of small hardware in form construction. The spring-snap tie holder accommodates all snap ties including those used for walers. The holders stay with the forms at all times.

In addition to the clamp, tie holder, and snap tie, the forming system also includes a snap-tie wedge. The booklet gives details on how the forms are erected using these devices.

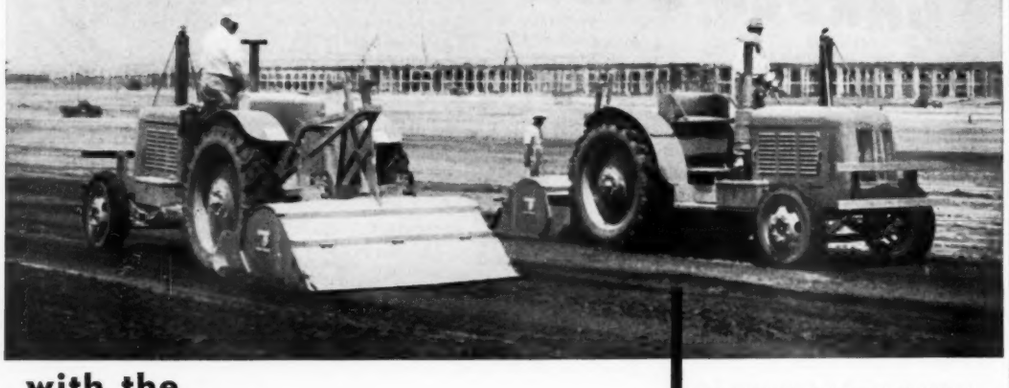
This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 732.

Gregory Elects Directors

C. B. Smythe, president of The Thew Shovel Co., Lorain, Ohio, has been elected to the board of directors by Gregory Industries, Inc., Toledo, Ohio. Ten other directors were re-elected. Mr. Smythe is president of the Power Crane & Shovel Association and a director of several companies. He has been president of Thew since 1945.

The Nelson Fasteners Division of Gregory Industries, Inc., is now manufacturing Nelson stud welding equipment in a building rented for this purpose. The fasteners had previously been fabricated for the company by others.

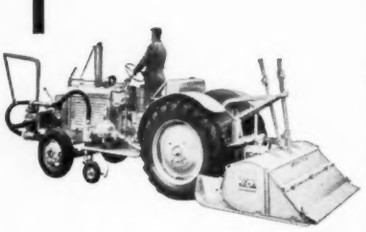
Now You Can Pulverize Harder Soil ... Process Deeper ... Get a Higher Daily Output



with the

NEW HEAVY-DUTY 1953 SEAMAN TRAV-L-PLANT

Two SEAMAN Self-Propelled MIXERS owned by Wright Contracting Co., at work on a portion of a large soil-cement project involving over one million square yards at the Albany (Ga.) Marine Depot.



The *NEW* Seaman Self-Propelled TRAV-L-PLANT is built to convert tough, difficult deep stabilization or compaction projects into fast moving high production jobs. You can pulverize harder clods and mix deeper than with any other mix in-plant travel plant.

Further, the Seaman TRAV-L-PLANT answers the ever-present questions:

"What can I do if aggregates are not properly coated in one pass?"

"If my soil-cement mix is not up to specification in one pass?"

With the SEAMAN — if binders are developing unfavorable characteristics due to any one of many conditions beyond the control of the roadbuilder . . . if gradation of aggregates still needs correction — *just make another pass with the SEAMAN* — or as many as you need to bring the job to perfection. You can afford it — with plenty to spare — because multiple passes with the SEAMAN are fast and very low in cost.

And with the SEAMAN, you have an all-purpose machine for *every* type of stabilization — with every binder, every size of aggregate up to 5" and every recommended native soil. There's never a *partial* mix when you process, blend and finish with a SEAMAN. And the material is firmly placed with uniform depth and density — partially precompacted, blended and ready for finish rolling.

Send for this Bulletin completely describing the SEAMAN TRAV-L-PLANT and the Self-Propelled MIXER. Shows field scenes, operating hints and complete specifications.

SEAMAN MOTORS Inc.

282 N. 25th St. • Milwaukee, Wis.

Schield Bantam's crawler-mounted excavator crane, Model C-35.

New Crawler Version Of ⅜-Yard Excavator

■ A 5-ton crawler-mounted version of the Schield Bantam ⅜-yard excavator-crane has been announced. Model C-35 is similar in construction to the company's earlier Model T-35 truck crane. The unit converts to use as a shovel, clamshell, dragline, backhoe, magnet, wood grapple, and pile driver.

A special feature of the crawler is a two-speed independent travel which enables the operator to work a front-end attachment while traveling and swinging. The undercarriage has a heavy duty main frame and rigid side rails. The 123¼-inch over-all length of the track provides added stability and lessens ground pressure for greater flotation in soft conditions. Units are available with tread widths of 16 and 24 inches.

The power unit is a gasoline engine developing up to 37 hp at 1,700 rpm. Diesel or electric power is also available.

For further information write to Schield Bantam Co., Waverly, Iowa, or use the Request Card at page 18. Circle No. 743.

Hard-Facing Electrodes

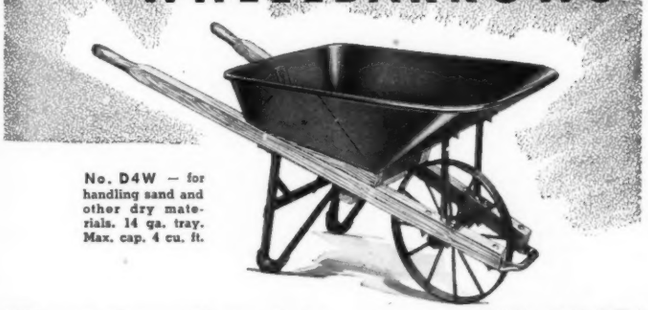
■ A new catalog on its line of hard-facing electrodes and rods is available from the Alloy Rods Co., 7205 W. Market St., York, Pa.

Wear-Arc electrodes and Wear-Flame rods are used in work involving straight abrasion, abrasion and severe impact, abrasion and light impact, abrasion and compression, abrasion and corrosion, abrasion and heat, abrasion with heat and impact, and abrasion with heat and corrosion.

The catalog is written from the "how to do it" standpoint. Three pages are devoted to an application guide citing wear parts, types of wear, and the correct electrode or rod to use in 13 major industrial applications, that include about 75 common types of hard-facing problems.

To obtain this literature write to the company and request Bulletin AR53-20 or use the Request Card at page 18. Circle No. 681.

Sterling's WOOD HANDLE WHEELBARROWS



No. D4W — for handling sand and other dry materials. 14 ga. tray. Max. cap. 4 cu. ft.

Wheel Your Materials . . . at LOW COST!

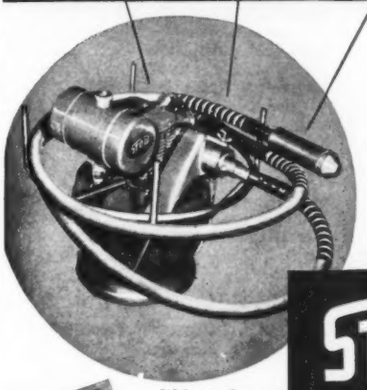
You'll like these new, lightweight, easy-wheeling Sterlings, designed for faster material transport service. Famous Sterling balanced construction puts 80% of the load on the wheel . . . only 20% on operator. Equipped with long wood handles, formed to fit operator's hands. Steel channel legs and reinforcements are just the right height. Means less stoop for operator and greater leg clearance. Steel wheel, roller bearing wheel with pneumatic tire or zero pressure cushion type wheel, can be furnished. Write for new Wheelbarrow Catalog.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

proven efficiency! proven dependability! proven on-the-job economy!



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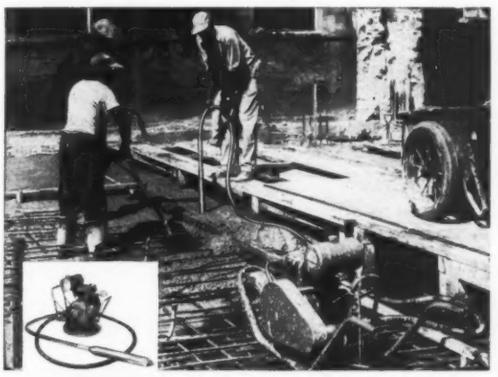

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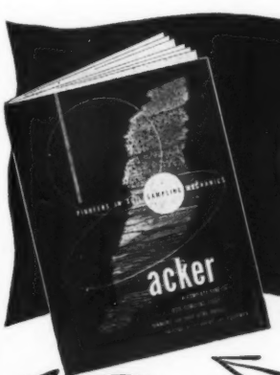

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Manufacturer Memos...

W. H. Brady Announces Promotions, Appointments

Two promotions and two appointments involving sales personnel were recently made by W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 12, Wis., manufacturer of wire, pipe and conduit markers, and other self-sticking industrial products.

Westley J. Tuite, former Chicago district manager, was promoted to general sales manager and will make his headquarters at the company's main office in Milwaukee. Joseph I. Stone, formerly eastern district representative, was promoted to the post of eastern district manager, with headquarters at the company's branch office in Newark, N. J.

Fred C. Kluhsman was appointed to Chicago, Ill., as the district representative there, and Paul J. Leonard to Philadelphia, Pa., where he will be mideastern district representative.

R. Leek for Chain Belt

Richard M. Leek is now mid-Atlantic district representative for the Construction Machinery Division of Chain Belt Co. of Milwaukee, Wis.

Mr. Leek's office is in the new Chain Belt office and warehouse at 4125 Whitaker Ave., Philadelphia 24, Pa., and his territory includes Pennsylvania, Virginia, West Virginia, Maryland, Delaware, Washington, D. C., and southern New Jersey. He has been associated with the company's Construction Machinery Division since 1949, and has done field sales and service work out of the New York office for the past year.

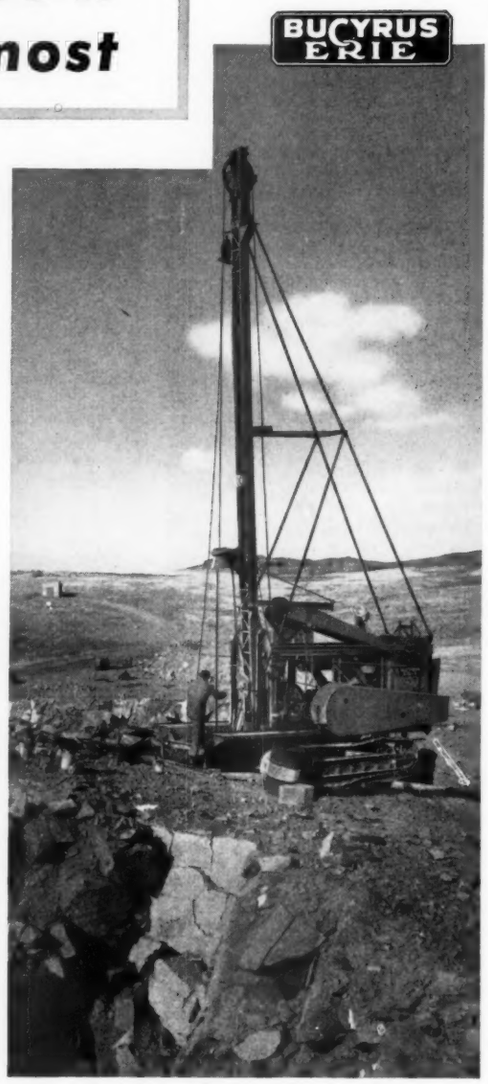
Two Nordberg Changes

J. D. Grace has been appointed manager of the screen department at the Crusher Division of Nordberg Mfg. Co., Milwaukee, Wis., manufacturer of engines, compressors, hoists, screens, and track machinery.

Mr. Grace's former duties as manager of the advertising and sales department have been assumed by R. E. Schulz.

SPEED where it saves you most

Here a Bucyrus-Erie drill pounds out hole in a rock pit. Derrick head shock absorber protects machinery from vibration — reduces cable wear by keeping shock loads down. A Bucyrus-Erie "first" the rubber shock absorber is the most successful yet devised.



Bucyrus-Erie blast hole drills have a nation-wide record for ramming holes down fast—and cheap. A brief rundown shows why—

Big 5⅝ to 12-in. holes—quick—The right balance of tool travel distance, tool weight, and blows per minute — combined with an unmatched rock shattering snap at the impact point — put these rigs "holes ahead" in penetration speed.

Quick moves — Long, sure-footed crawlers mean fast, easy rolling over rough ground — positive traction up 30 percent grades.

Rapid set-ups — Hydraulic leveling jacks (standard on 50-T; optional on 29-T) eliminate elaborate ground preparations, blocking and cribbing. Built-in stabilizing jacks (on the 22-T, 27-T and 29-T machines) provide time-saving 3-point setups even under adverse ground conditions.

Close-grouped controls — Easy handling levers are positioned close together for convenient reach. A driller can run this rig at top speed for long periods without slow down. Built-in tool wrenches (on all except 22-T) safely speed tool changing.

For fast, profitable operation standardize on big hole, fast hole Bucyrus-Erie drills. Four models—5⅝ to 12-in. hole capacities.

5B53

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Caterpillar Forms Groups, Makes Personnel Changes

Two distinct groups have been designated by Caterpillar Tractor Co., Peoria 8, Ill. They are a General Offices group and the Peoria Plant, of which the latter now operates as a separate unit, similar to the company's other plants at Joliet, Ill., Milwaukee, Wis., San Leandro, Calif., and York, Pa.

Peoria Plant operations include: the manufacturing department; the parts department, covering purchasing and a local traffic office; employee relations combined with the labor relations department; an education and training department; and an accounting department. All other departments, or portions of departments not included within the Peoria Plant group, comprise the General Offices. These consist of the general staff groups segregated from the plant department, in addition to the present departments of advertising, community relations, general sales, export sales, engineering, merchandise, research, service, and treasury. The General Offices group continues its location in the East Peoria plant space.

In conjunction with the division of departments, C. A. Woodley, general factory manager at Peoria, has been named manager of the Peoria Plant.

Following an earlier announcement with regard to construction of a new plant at a site not yet determined (see C. & E., Aug., 1953, pg. 130), Warren Kinsey, employee relations manager, has been named manager of the plant. Although he has assumed his new duties, he will not leave Peoria until sometime in 1954.

Marmon-Herrington News

The Marmon-Herrington Co., Inc., Indianapolis 7, Ind., manufacturer of all-wheel-drive trucks, trolley coaches, and motor coaches, has announced the appointment of Denzil Coffey as district manager for the southeastern section of the country. Mr. Coffey previously served in the Marmon-Herrington sales department.

Robert V. Cummins has been named to head the sales promotion department. Mr. Cummins has been active in real estate and building in Indianapolis for the past year.

Le Roi Forms Division

The Le Roi Co., Milwaukee, Wis., has formed the Le Roi-Transo Division for the manufacture of front-end loaders and truck-mounted mixers. Front-end loaders in ½, 1, and 1½-yard capacities will be manufactured at the new facilities in Coldwater, Mich. The mixers cover the entire truck-mounted range from 3 to 6-yard mixing capacity. They will be produced in Dunkirk, Ohio.

Management of the new division will be centralized in Milwaukee. N. M. Sedgwick, formerly general sales manager for the company's Construction and Mining Division, will be general manager for Le Roi-Transo. W. D. Lund will serve as assistant general sales manager. He was formerly assistant general sales manager for the Construction and Mining Division.

R. H. Rodolf will take the place vacated by Mr. Sedgwick, while A. J. Jensen has been named to succeed Mr. Lund. C. L. Meigs has been named manager of portable compressor sales. The loaders and mixers to be manufactured by the new division will be added to Le Roi's line of construction and mining equipment, which now includes portable air compressors, industrial four-wheel tractors, and a full line of pneumatic tools and rock drills.

Pettibone Names Manager

W. F. Sternberg has been appointed manager of loader manufacturing for Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill. He will maintain headquarters at the Chicago home office.

In addition to his manufacturing responsibilities, Mr. Sternberg will be in charge of parts distribution and service for Pettibone's line of loaders, which include the Speedall front-end loader, Speed Swing loader, yard crane, Tote crane, Cary-Lift loader, and Haiss-T loader.

Mr. Sternberg has had extensive experience in manufacturing, sales, and service to the road construction, earth-moving, material handling, and mining fields.

Lee Rubber Appoints

G. L. Smith, former sales manager for the Republic Rubber Division of Lee Rubber & Tire Corp., Youngstown 1, Ohio, has been appointed general sales manager of the company. Mr. Smith's appointment was made because of a number of changes in the organization, including the addition of a new line of wire-reinforced hose, realignment of sales territories, appointment of sales supervisory personnel, and plans for further sales expansion.

Flexible Steel Appointee

Howard Gill is a new representative for the Flexible Steel Lacing Co., 4704 Lexington St., Chicago 44, Ill., manufacturer of belt fasteners for joining conveyor and transmission belts. Mr. Gill will handle sales for the company in Mississippi, Alabama, Georgia, Florida, and western Tennessee—a territory formerly served by Austin Webster who recently retired.

U. S. Rubber Manager

Warren A. Tipton has been named general sales manager of the mechanical goods division of United States Rubber Co., Rockefeller Center, New York 20, N. Y. He succeeds Walter F. Spoerl, who is retiring after 45 years of service. Mr. Tipton joined the company in 1935, and has most recently been sales manager of the mechanical goods division.

Supervisor for Monsanto

J. W. Colgan is the new maintenance supervisor for the Avon, Calif., plant of the Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo. He takes up his position with the western division on completion of his assignment as construction project engineer for the company's Organic Chemicals Division.

Wright Sales Personnel

A series of promotions and appointments has been made in the Wright Power Saw & Tool Corp., 292 Longbrook Ave., Stratford, Conn., manufacturer of the Wright air saw.

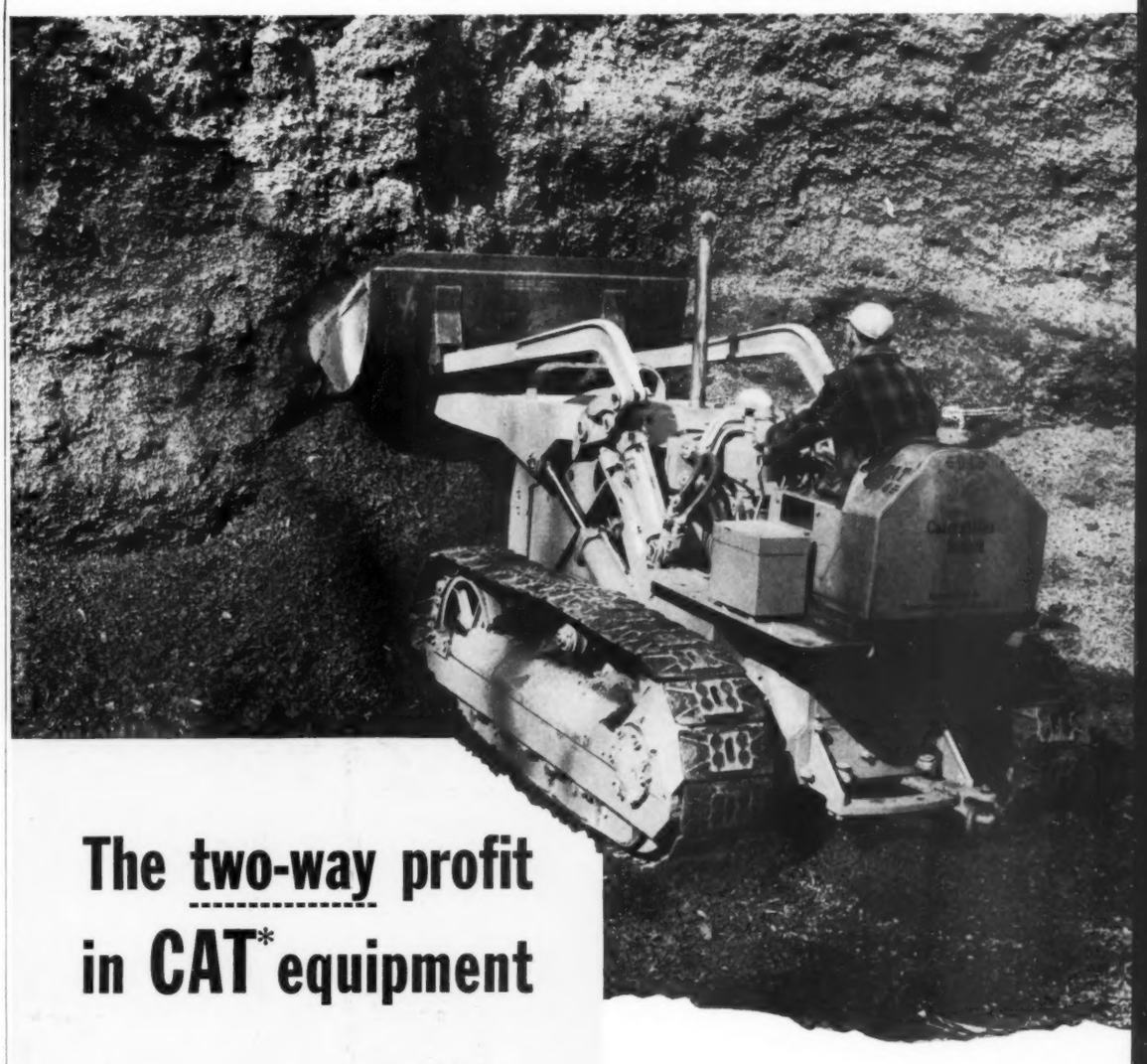
Irwin F. Woodland has been promoted from western district manager to sales manager, and William S. Evans has been named assistant sales manager. Assisting in product testing is service manager William R. Baarck.

The sales department expansion has been made so that several new models and products, which the corporation has in the preliminary production stage, can be introduced.

INCO Elects Officers

Roy Gordon, vice president and general manager of Canadian operations of The International Nickel Co. of Canada, Ltd., Copper Cliff, Ontario, has been elected a director of the company. Mr. Gordon, associated with International Nickel since 1936, has held such positions as director of the Copper Cliff research department, and assistant to the vice president. He succeeds the late R. Leslie Beattie.

John A. Marsh has been elected vice president of the company, whose home office is at 67 Wall St., New York 5, N. Y. Formerly assistant vice president and manager of the operating department of the company, Mr. Marsh was in general charge of all plant operations in the United States. He has been with the company since 1928.



The two-way profit in CAT* equipment

Most owners of Caterpillar machines know from their own cost sheets that the big yellow units are money-makers. What they don't always recognize is the added financial "bonus" that comes from high resale value.

For two years J. Russell Eshback, of Bushkill, Pa., used a Caterpillar D2 Tractor and Traxcavator to load shale and topsoil. When he found a need for bigger, more powerful equipment he bought another machine of the same make—this time the Cat HT4 Shovel, shown above. The shale bank and the topsoil stockpile are two distinct operations, but the HT4 easily handles all the loading, moving back and forth between the two jobs. Meanwhile Mr. Eshback made an excellent deal for his smaller machine. In his own words, "When I needed something heavier than the D2 my experience with Caterpillar equipment made me choose the HT4 Shovel. I find it is more rugged and has more all-around advantages than any other machinery on the market. And of course the resale value on my old D2 certainly more than pleased me."

Take that extra profit factor into account when you consider the purchase of new equipment. Your Caterpillar Dealer can show you many examples. And he'll be glad to prove to you, on your own job, how a big yellow machine will do *more* work, in *less* time, at *lower cost*. Call him today.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

HERE'S WHY

this remarkable Rear-Dump belongs in your present fleet

Hauls anywhere . . . Tournarocker is a new kind of haul unit built from the ground up for "off-road" hauling. It safely travels mountain trails and cross-country as well as highways and city streets. It hauls capacity loads over any kind of terrain. And, it stands up to tough, rough hauling work on steep grades with a minimum of maintenance.

Cuts weather delays . . . Giant tires increase flotation. There are no small idler steering wheels to rob power and traction. Tournamatic differential applies extra power to drive wheel on firmest footing . . . pulls unit through mud, sand, and snow which stop ordinary hauling units.

Reduces maintenance . . . because Tournarocker has no hydraulics, high-pressure jack lines, long drive shafts, frame, sub-frame, springs, or tie rods, the most common troubles of other rear-dumps are eliminated. Large single tires have no divided face to collect rock fragments that wedge in, wear and tear. Three-layer, grid-type bowl with tool-steel floor resists shock of dumped-in rock.

Speeds loading . . . Excavator operator gets faster load cycles because he has a 9½′ x 12½′ top opening for a target. He gets less spillage which saves clean-up work. He swings in and out faster because of wide low entry at rear of body.

Saves spotting time . . . 90° turns and positive power steer quickly position "big-target" body under dipper. No switching back and forth or turntables necessary.

Cleans load every time . . . Even in sticky clay, Tournarocker dumps clean. Streamlined body sheds material readily . . . none rides back to excavator to steal payload room on next trip. Induction body heating available for winter work.

Works fast in tight quarters . . . push-button power steer, 90° turns, electric controls, plus multi-disc air brakes that have more braking surface on a *single* wheel than most hauling units have on *all four,* all contribute to fast, safe haul.

Reduces dumping time . . . a touch of electric switch activates hoist motor. Body lifts smoothly for instant dump. You get "power up" and "power down". There's no delay for hydraulic pressure to build up . . . no shock loads of free gravity dump. Powerful braking action of 4-wheel disc air brakes lets operator back up fast to edge of fill.

Saves dump clean-up . . . front-wheel drive and powerful brakes make it easy for operator to spot safely for dump over edge of bank. Body swings behind and below rear wheels, dropping rocks and dirt completely over the edge, greatly reducing dump clean-up. This clean dumping permits continuous free spotting along entire fill.

Design provides comfort . . . and safety for operator. Big low-pressure tires and air-foam cushion seat smooth out bumps . . . cut the "up-and-down ride" for driver. Push-button controls on instrument panel activate electric motors at point of action. Heavy manual work fighting steering wheel and control levers has been eliminated. Operator dumps, steers, shifts electrically. Fatigue factors are greatly reduced.

Improves safety . . . low center of gravity, 15″ clearance, high visibility, big brakes, front-wheel drive, giant tires and ease of control, all help make Tournarocker the leader in hauling safety.

Insures future earnings . . . Behind the 186 hp 2-wheel Tournarocker prime-mover, you can quickly interchange a 16-yd. scraper, 18-yd. bottom-dump, 15-ton crane, or big flat-bed. Any of these additional trailing units are available at about 25% of initial cost. With them, you can always fit future operations, insure bigger annual earnings.

See your LeTourneau-Westinghouse Distributor for all the facts. He'll be glad to show you performance figures from jobs like yours, or, if you wish, give you names and addresses of nearby owners of Tournarockers.

Tournarocker—Trademark Reg. U.S. Pat. Off. R-406-G-a

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS